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A study of mass feeding by automatic vending operators in Greater Boston

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BOSTON UNIVERSITY
College of Business Administration

THESIS

A Study of Mass Feeding by
Automatic Vending Operators
In Greater Boston

By

Robert L. Goldberg
(A.B., Harvard College - 1953)

Submitted in partial fulfillment of
the requirements for the degree of
MASTER OF BUSINESS ADMINISTRATION

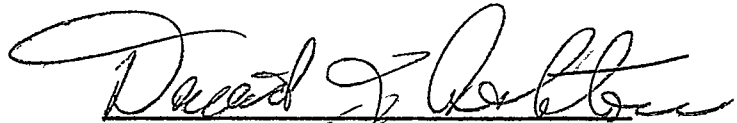
1962

This thesis was prepared under my supervision,
and approval is hereby indicated.

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This thesis was read by me and is approved.

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I. INTRODUCTION

The days of the lunch pail and "brown bag" as standard items of equipment for the factory worker are rapidly coming to a close. The worker is presently buying his food from plant cafeterias, local cafeterias, lunch trucks, wagons and automatic vending machines. The latter method of feeding (automatic vending) has grown at the expense of other types of feeding operations and has forced manual feeding operators and factory managers to reappraise their modes of operation and their facilities. This trend of providing eating facilities within the confines of the plant for on-premise consumption of mechanically-dispensed food is not restricted to factories alone, but is also used by schools, hospitals, office buildings, shipyards, bowling alleys, and other types of facilities where crowds congregate.

Once many of the industry problems are overcome, the long-term potential of mass feeding via automatic vending machines looks very encouraging. Consider the following remark by Eugene Miller in the June, 1959 issue of THINK magazine (1).

"Today over half of the country's 65 million work force eats at least one meal away from home, so do more than ten million students. Figure they spend at least thirty cents a day buying this meal and you have a feeding bill of around 15 million a day. If vending machines can capture only twenty per cent of this business it means a \$3,000,000 a day business."

The United States Department of Labor, Bureau of Labor Statistics estimated that by 1975 the size of the work force of the United States will be in the vicinity of 95,000,000 people. This figure represents a 50 per cent increase over the present work force and hints at the future potential of mass feeding. The expected labor force growth is shown in Exhibit I, page 3.

A. Statement of the Problem

How much of the automatic feeding potential will the vending industry realize in the next few years? Consider the following:

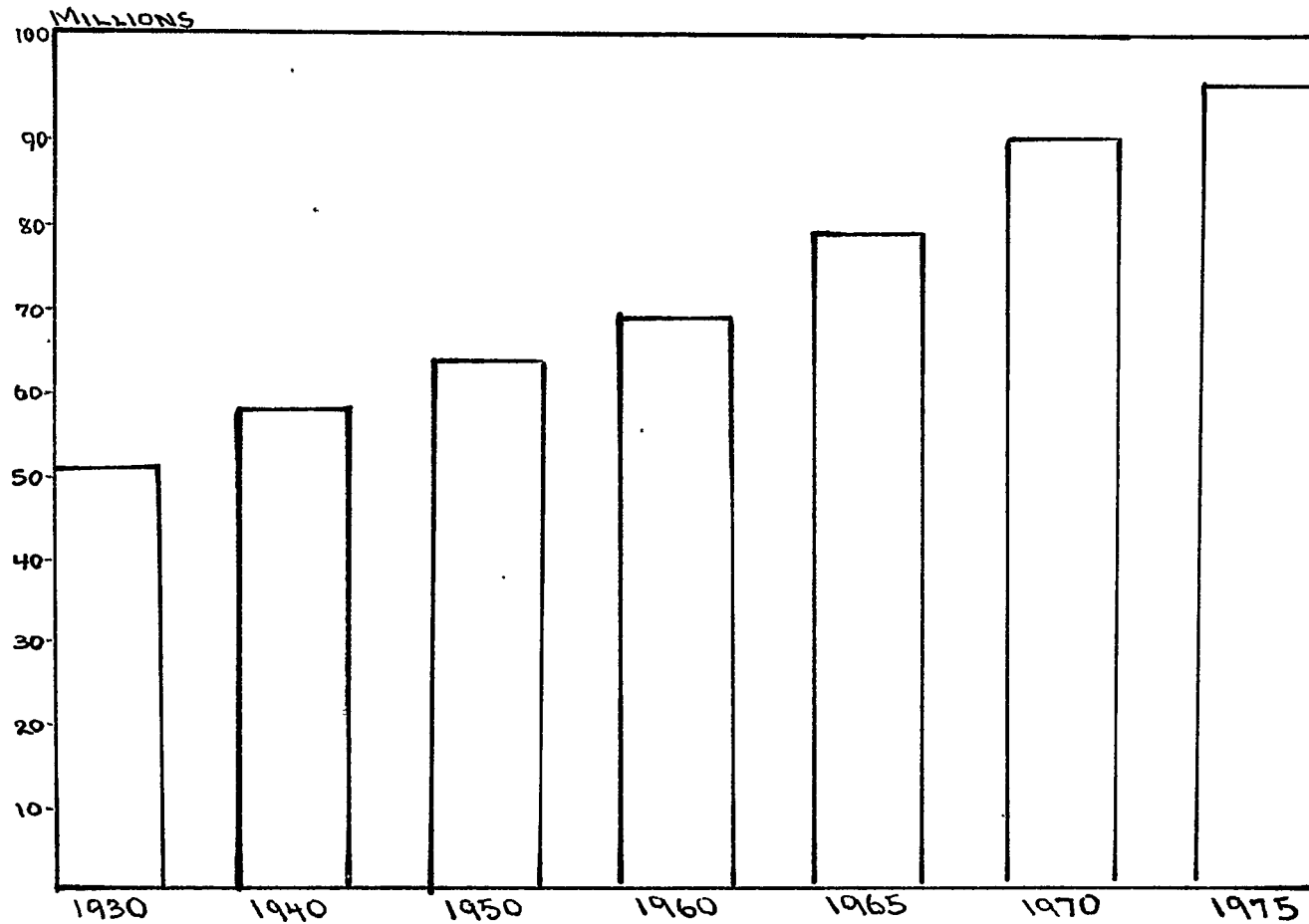
Mr. Harold Roth, chairman and president of Continental Industries, Inc., a manufacturer and operator of vending machines, stated in answer to the question (2) "what do you see as prime advantages in machine (vending) over manual service?"

"Much has been said and written regarding the 'big day' when an industrial plant or office location can eliminate its manual cafeteria - and the accompanying subsidy - by use of vending machines that will serve quality hot meals at the drop of a coin. To us, that day has arrived and we are producing this service at a profit to our operation, to the satisfaction of the consumer and continually winning the approval of location management."

Not all the vending operators share Mr. Roth's opinion as is evidenced by the answer Mr. Davre Davidson, president of Automatic Retailers of America, gave to the following question (3), "in which product area do you see the greatest expansion for automatic merchandising within the next five years?"

EXHIBIT I

Labor Force Growth 1930-1975



SOURCE: U. S. Department of Labor, Bureau of Labor Statistics, 1959
Bulletin 1242: Population and Labor Force Projections for
the United States, 1960 to 1975.

"The greatest percentage increase in vending will undoubtedly be in food. But we believe the industry must maintain the proper perspective here if it is to avoid self harm through over-selling For really effective hot food vending (other than in cans), the industry is still awaiting a major breakthrough in equipment, in packaging, and in means of preserving food to reduce waste. Pending complete breakthroughs here, there will long exist a need for both manual and automatic approaches to industrial and institutional feeding. Just in the past two years the line of demarcation between the industrial caterer and the automatic merchandiser has grown dim; in another two years this line will likely disappear."

The opinions expressed by Mr. Roth and Mr. Davidson are examples of the current thinking on the status of mass feeding by automatic vending machines. This thesis is a study of mass feeding by automatic vending operators in Greater Boston.

B. Significance

The National Automatic Merchandising Association estimated that total automatic vending sales in 1956 were \$1,803,800,000 and in 1960, \$2,297,200,000 (4).

In this same period (1956-1960), total automatic vending sales rose 27 per cent while hot food machine sales, starting from a low base of \$2,000,000 (1956), rose to \$26,300,000 in 1960 for an increase of 1,215 per cent. A trend comparison of total sales for various segments of the vending industry is shown in Exhibit II, page 5, and it can be seen that hot food vending is the fastest growing segment of the automatic vending industry.

C. Background of Mass Feeding

Although the first vending machine can be traced back 2000

EXHIBIT II

MERCHANDISE SALES THROUGH COIN OPERATED VENDING EQUIPMENT
(000,000)

	1953	1954	1955	1956	1957	1958	1959	1960	% Increase 1953-60
Bulk, (Nuts, Candy, Gum)	\$ 25.0	25.8	26.3	28.9	29.0	31.5	36.5	30.2	-20.8
Candy	200.0	210.0	215.0	230.0	240.0	245.0	225.0	195.5	- 3.3
Chewing Gum	11.0	12.5	13.7	15.5	16.1	13.5	15.7	8.2	-25.5
Cigarette	650.0	690.0	735.0	800.0	825.0	830.0	840.0	993.7	52.8
Cigar	2.0	2.5	2.6	2.9	3.1	3.4	2.9	2.9	45.0
Coffee & Hot Beverages	50.0	65.0	99.6	109.0	135.0	170.3	189.6	176.5	253.0
Cookie Cracker									
Biscuit	13.0	12.8	14.4	17.0	25.2	16.6	13.0	13.4	3.0
Fruit Juice & Fruit	5.8	4.7	7.0	2.5	2.2	5.6	4.5	3.5	39.7
Hot Food	N.A.	N.A.	N.A.	2.0	6.7	18.5	21.1	26.3	1,215.0
Ice Cream	13.0	20.0	23.0	26.0	28.0	29.0	27.2	27.0	20.8
Milk	17.0	22.4	39.2	53.0	69.3	88.7	85.6	87.6	415.2
Sandwich	1.0	1.0	1.5	2.2	2.7	29.0	52.5	53.6	536.0
Pastry	2.4	2.4	4.2	4.8	5.5				
Soft Drink, Bottle	300.0	320.0	380.0	405.0	430.0	448.1	450.0	512.2	70.7
Soft Drink, Cup	70.0	73.1	78.0	105.0	120.0	120.5	183.2	166.6	138.0
Total	\$1,360.2	\$1,462.2	\$1,639.5	\$1,803.8	\$1,937.8	\$2,049.6	\$2,146.8	\$2,297.2	68.8
% Increase Previous Year		7.4%	12.1%	10.0%	7.4%	6.3%	4.7%	7.0%	

SOURCE: Annual Directories National Automatic Merchandising Association 1953-1960.

years to a Greek named Hero Cstebus who made and operated a holy water dispenser for a five drachma coin, it was not until 1926, with the introduction of William Rowe's first cigarette machine, that vending became a large merchandising operation (5).

"As the 1920's drew to a close, mergers and consolidations took place within the automatic selling industry. The Autosales Corporation (which had been reorganized at the end of World War I) acquired additional subsidiary companies, and a new holding company - Consolidated Automatic Merchandising Corporation - appeared on the scene." (6)

Although many of CAMCO's ambitious goals never materialized, they did introduce many ideas which the automatic selling industry used in later years. The most important idea pioneered by CAMCO was the multiple-machine installation which is a battery of automatic machines grouped to sell a number of products. The industry received added impetus in 1937 with the introduction by the Coca Cola Company of the coin-operated soft drink machine, which had been developed by the Vendo Company of Kansas City, Missouri and the Vendolator Company of Fresno, California.

That area of automatic vending which has shown the most technical advancement and the greatest potential is in-plant feeding. The common term "in-plant feeding" is a misnomer since groups of machines placed together to provide a complete meal can be located in a school, shopping center, office building, hospital, transportation terminal or shipyard. For this study the term "mass feeding" will be used in place of "in-plant feeding" and will refer to the dispensing

of food and beverages via automatic machines as opposed to over-the-counter manual-feeding installations that are used in some locations.

Mass feeding of people through vending machines had its beginnings in the 1930's when the Automatic Canteen Company was organized to provide this specialized service to industrial locations (7). Although industrial locations provided a great source of revenue for the vendors, service was confined to a limited number of items such as cigarettes, candy, gum and nuts.

During World War II, many people were working for the first time in factories which were operating on a one-, two- and oftentimes a three-shift basis. These workers were introduced to the convenience of vending machines, and the psychological barrier of something new and mysterious was broken for many people. The "silent salesmen" of the vending industry worked around the clock quietly but oftentimes not completely efficiently, due to a shortage of materials and the absence of efficient vending machines. Vending operators were using everything possible to keep the old machines in operation, even though in many instances the machines should have been scrapped.

World War II changed the character of automatic selling and gave it new direction. With long working hours in industry, automatic merchandising had the opportunity to prove the real value of its services. As the war drew to an end, it was apparent that automatic selling's biggest opportunity would be in industry. There was a great deal of development of many new types of food and beverage venders,

with the result that the vending operator was able to offer the location owner a full line of vending machines which could dispense many food items not previously vended. In many instances the location owner used the machines to supplement his main feeding facility and, in some few instances, as the primary source of feeding.

In the years following, vending machines were improved in workability, design and type of products that could be vended. The development of better machines was prompted by a number of sources:

1. Machine manufacturers who were seeking new products.
2. Product suppliers who were seeking new markets for their products.
3. Vending operators who were seeking to expand their services.

With improved technology, vending machines were designed to handle a multitude of foods and beverages.

"The first serious attempts to serve hot foods from automatic machines came in 1946 with the introduction of the hot sandwich cooker developed by the General Electric Company and Automatic Canteen." (8)

As more varied types of products were vended, the purchase prices fluctuated, and the development of coin mechanisms was an important step to insure the growth of automatic selling.

"Change-making devices were introduced in the 1920's, but they were crude and failed to offer slug protection. By 1946 coin changing mechanisms were available in two models: the so-called service changer, mounted on a stand, which simply returned change for a quarter or a dime, and the built-in changer, an integral part of an automatic selling machine, which made the correct change from a customer's purchase." (9)

In the 1950's the labor force expanded again to meet the emergency of the Korean War. Automatic vending operators expanded their services in the industrial locations by convincing management that automatic vending was the most efficient way to handle the traditional "coffee break", and to supplement manual feeding operations during the off-hours.

In the period 1955-1959 the vending industry, through the development of more modern equipment designed to vend a multitude of hot and cold products, partially acquired the ability to be the primary server of full course meals in industrial and institutional locations (10).

"The changes of 1960 were varied and far reaching enough to justify their designation as a 'milestone' in the development of the vending industry." The more significant changes in 1960, as cited by the National Automatic Merchandising Association were:

1. The emergence of several national and regional operating companies through a continuing series of mergers during the year.
2. Consolidations of existing machine manufacturers, primarily to obtain rapidly a diversified or 'full line' of machines in a highly competitive market.
3. The acquisition of vending machine manufacturers by companies outside the industry.
4. The issuance of securities by operating and manufacturing companies to the public.
5. The increasing expansion of vending into 'automatic' food services in plants, offices, colleges, hospitals and many similar institutional outlets.

6. The availability of currency changers and the first public experiments coupling them to merchandise and ticket venders.
7. The entry of vending companies into the catering field and vice versa.
8. The advent of truly remarkable machines, such as iced soft drink venders, the single cup brewing coffee vender, the multi-purpose flexible general merchandise vender, and the new models of hot food dispensers first shown at the 1960 N.A.M.A. exhibit.
9. The growing emphasis on uniform machine design, allowing arrangement in modular "banks" and general enhancement of vending "areas". (In some cases this is leading to inclusion of vending in architects' blueprints for new structures.)"

To this list the author would add the following:

1. Many vending operating firms established their own commissaries in 1960.
2. Packaging = a vital part of merchandising (and delivering) vendible products = saw numerous improvements in 1960 to serve the customer better.

What about the future? Aaron Goldman, president of G. B.

Macke Corporation, states: (11)

"I think we can look forward to a greatly accelerated pace in the feeding of industrial employees through coin operated cafeterias. The enthusiastic acceptance already given such automatic cafeterias in spite of their technological limitations augurs well for their greatly expanded use as better methods are found to dispense heated and chilled foods."

D. Method of Approach

Analysis and study of existing material about the vending

industry, such as books, periodicals, and trade magazines, were done in order to gather vital background information. The amount of published material on the subject of mass feeding is not very large because it is only in the last few years that writers have taken notice of mass feeding as a separate subject within the automatic vending industry.

The largest part of the material presented in this thesis has been obtained by field work in the form of personal interviews, telephone and correspondence with vending operators, suppliers, location-owners and manufacturers of vending machines. The following table is a summation of the number and types of interviews conducted by the writer during the period from January 1960 to February 1962.

	<u>Personal Interview</u>	<u>Telephone Interview</u>	<u>Correspondence</u>
Vending Operators	12	50	
Suppliers	2	2	4
Location-Owners	3		15
Manufacturers	1		6

Correspondence and telephone interviews were used in those instances where geographic limitations, time or expense did not allow a personal interview.

Three questionnaires were used to gather information from the following sources:

1. Vending operators
2. Location-owners
3. Health departments

The first questionnaire, shown in Appendix A, page 136, was used primarily as a guide for the personal interviews the author had with vending operators in Boston and Vicinity.

The second and third questionnaires, shown in Appendices B, page and C, page were sent through the mail. Analysis of all three questionnaires is made in the body of the thesis.

The writer found that people in the vending industry might like to offer information, but because of company policy, personal record keeping and the competitiveness of the industry, were often reluctant to provide more than mere surface information which can also be gathered by keen observation.

E. Boston and Vicinity Defined

The geographical boundaries of the area being studied are shown in Exhibit III, page 13. This area includes the central City of Boston and the forty cities and towns that surround it, with a total population of 2,013,609. A breakdown of this population by city and town is shown in Exhibit IV, page 14.

The population in this area represents 20 per cent of the population of all New England and 40 per cent of Massachusetts. Besides the normal adult work force that travels into Boston and Vicinity to work at approximately 5500 manufacturing establishments, there are over ninety educational institutions with many thousands of students in attendance (12). There are three Boston Railroad Terminals, a major international airport and numerous bus depots.

It is apparent from the above data that Boston and Vicinity offer a lucrative market for the automatic vending mass feeder.

Study

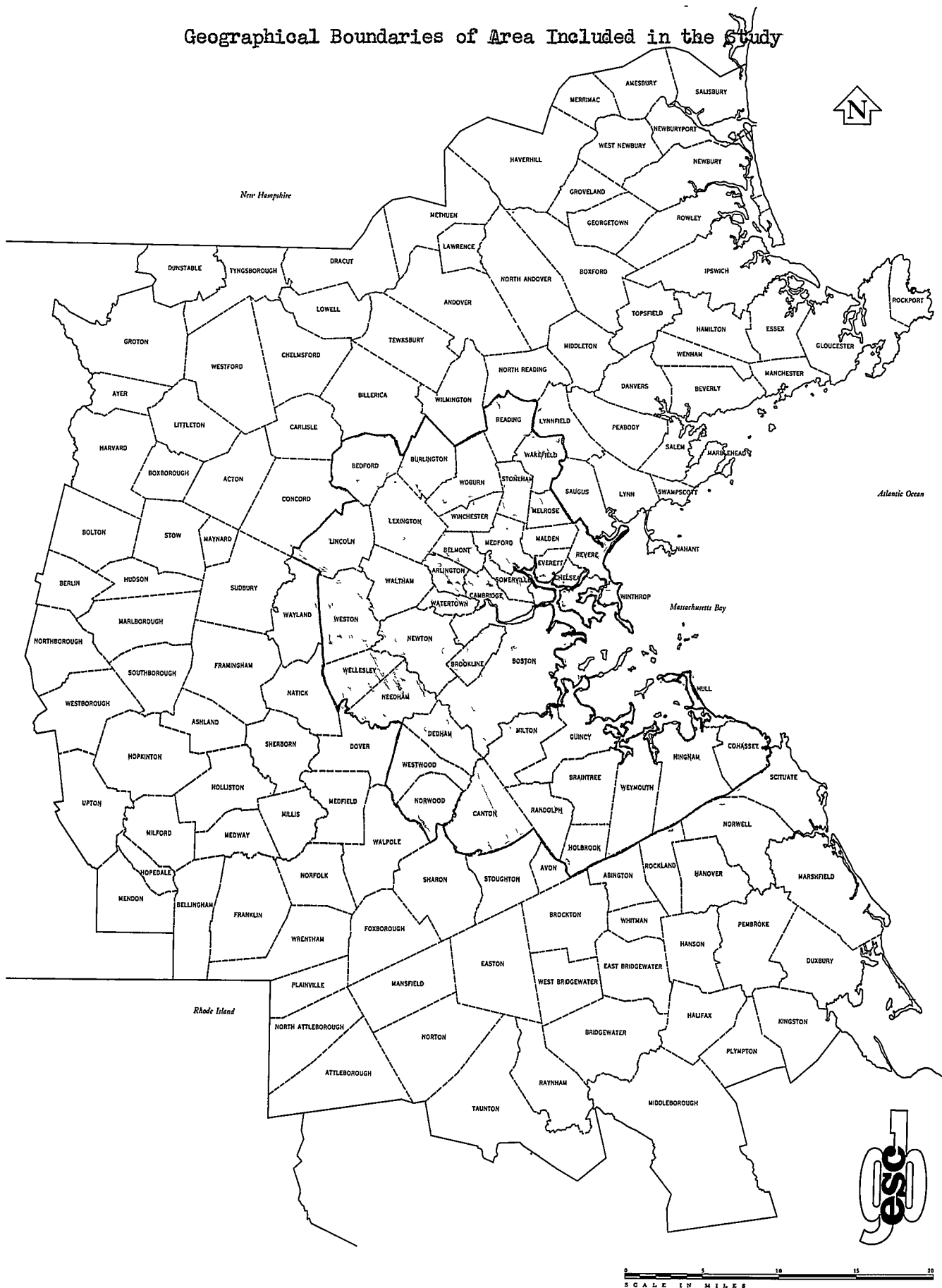


EXHIBIT IV

Population of Cities and Towns Included in the Study

<u>Cities and Towns</u>	<u>1960 Population</u>
Arlington	50,745
Bedford	10,948
Belmont	28,671
Boston	682,300
Braintree	30,926
Brookline	56,876
Burlington	12,903
Cambridge	106,544
Canton	12,762
Chelsea	33,480
Cohasset	5,765
Dedham	23,816
Everett	44,342
Hingham	15,311
Holbrook	10,032
Hull	5,649
Lincoln	5,546
Malden	56,348
Medford	64,854
Melrose	29,663
Milton	26,078
Needham	25,635
Newton	91,498
Norwood	24,907
Quincy	86,756
Randolph	18,847
Reading	19,258
Revere	39,864
Somerville	94,337
Stoneham	17,917
Wakefield	24,276
Waltham	54,473
Watertown	38,992
Wellesley	26,017
Weston	8,264
Westwood	10,332
Weymouth	47,971
Winchester	19,133
Winthrop	20,190
Woburn	31,383
TOTAL	<u>2,013,609</u>

SOURCE: Greater Boston Economic Study Group
 Reprint of United States Bureau of the Census 1960 population.

II. THE VENDING MACHINE

Mass feeding requires that a battery of well designed vending machines be propitiously placed so as to create an impact on the passerby and evoke a desire on his part to make a purchase. Single machines, each serving a particular type of product, are often placed side by side in a specific location. Sometimes this complete grouping of machines is covered by a decorative panel which presents a uniform appearance yet still allows the purchaser of the vended product to make his selection.

An automatic vending machine is a mechanical device consisting essentially of a frame, merchandise trays, a coin receiving slot, coin chute, a slug rejector unit, an activating mechanism which operates mechanically or electrically to force a unit of goods from the merchandise tray to the receiving tray, and a cabinet. Depending on the type of unit involved, some machines have the following: coin changers, bill changers, refrigeration units, cooking and heating units, transaction and receipt counters which record the number of sales and dollar volume for a given period of time.

The actual vending mechanism in a machine may be electric or manual, but in every case, the operation is set in motion or made possible by the acceptance of coin or paper money.

In manually operated mechanisms, which are both simpler and cheaper than electrically operated mechanisms, the coin (bill) is used

to form a mechanical link between a button or lever which is used to make the machine work. In electrically operated mechanisms the coin (bill) is used to set off a complicated series of electrically powered operations. The coin (bill) first of all trips a master switch which in turn activates a control unit which sets off various timed reactions with the machine, using a series of microswitches, electric motors or solenoids.

The three basic types of machines used in mass feeding are bulk, package and liquid vending machines. The bulk vending machines are used for such items as candy, nuts, gum and milk. Package vending machines are used to sell cigarettes, candy, milk (cartons), ice cream, pastry, sandwiches, canned soups and hot platters. The liquid vending machine is used to dispense such items as coffee, soft drinks, hot chocolate and tea.

In the last ten years the machine manufacturers have changed from manufacturing specialized venders dispensing single items to "all purpose" machines that vend a variety of items. More recently, the Rudd Melikian Company of Hatboro, Pennsylvania manufactured a single machine which has a capacity of up to 400 general store items (13). The Wittenborg Company of Portland, Oregon manufactures a hot and cold machine capable of handling up to 408 food items (14).

Even though the manufacturers have made great technological advances, there are many problems connected with the machines, both from a technical and management standpoint. Each of these problems

is discussed in the following paragraphs:

A. General Limitations of the Vending Machine

1. One limitation is the number of merchandise units that can be stored in a vending machine, as compared to other types of outlets that can store their products in greater quantities. Although machine manufacturers have increased the merchandise capacities of vending machines, some locations with extremely high turnover are often out of merchandise before the route driver's scheduled call.

2. A second limitation is that the consumer does not have the same advantage as at the supermarket self service counter, where he can in many instances handle and see the items for sale. This problem has been overcome in part by the development of machines with glass fronts.

3. A third limitation that has been overcome to some extent is the inability of the mass vender to sell items for more than a dollar without forcing the consumer to insert more than four quarters. At the present time two firms (National Rejectors, Inc. and ABT Manufacturing Corp.) are leasing currency changers that will change bills in denominations up to \$10.00. This latest advance in machine capability will be an added factor in promoting sales lost through lack of change and the inconvenience of carrying many coins.

B. Promotional Limitations

When the consumer buys merchandise from a vending machine, his buying procedure is subject to certain types of limitations.

1. The consumer must initiate the sale, motivated by impulse or desire, where the machine is located.

2. The consumer must make a selection of merchandise based on information presented on the front of the machine. With items such as candy, gum and cigarettes, the consumer knows fairly well what he is going to receive. For food items, the consumer is not as certain as to the quantity and quality he will receive. The consumer cannot ask anyone about the merchandise unless a service man or attendant happens to be present. In many mass feeding locations there is an attendant or matron present during the peak hours of feedings.

3. The consumer cannot change his mind about what he wants to purchase once he has activated the vender.

Primarily, mass feeding operators rely on the presence of machines in a location to promote sales. Here the operator is aided by the fact that his consumer is a captive one and buys the vended goods because he has reacted to an impulse and this machine will satisfy this impulse. The operator hopes that this impulse reaction will become habit, and that the consumer will visit the machine more often. The problem then arises as to how many machines can be placed in a given location to serve it in an optimal manner. Machines with a high breakeven point cannot be placed by chance in any location, but must of necessity be put into an area where volume can be obtained that is higher than the breakeven point.

In forecasting the profitability of a location, a great deal

of consideration must be given to how many machines are needed to service a location. This problem is treated more carefully in Chapter V.

Venders have relied to some extent on the product advertising by the manufacturers of vended merchandise, but even more on selecting well designed attractive locations, where the consumer can relax and enjoy his meal in a restaurant type atmosphere, as shown in Exhibit V, page 20. In the larger, more modern plants a particular area may be set aside for a vending cafeteria, where employees can spend their "breaks" and lunch hours. Here the amount spent per employee per week shows a sharp increase over locations where the consumer must buy the item and consume it while standing by the machine.

G. Failures of the Machine

Vending machines are subject to the following types of breakdowns: mechanical, electrical, heating and refrigeration. As machines are made to perform more complicated tasks, the problem of maintenance becomes correspondingly more difficult.

The operator usually keeps records of service calls made by his repair force. This record contains the following information:

1. type of machine, 2. type of malfunction, 3. action taken, 4. length of service call, 5. spare parts used for repair.

This record is used to spot weaknesses in various manufacturers' machines and serve as a basis for determining future purchases.

Because all operators do not maintain accurate records of types of breakdowns, it is difficult to classify them. It is enough

EXHIBIT V

Automatic Vending Location in Corning Glass Works, Central Falls, Rhode Island



to say that the failures occur often enough to be of major concern to the operator, and that he must contend with several major problems.

First, the consumer is annoyed because he sometimes cannot buy the goods when he wants them, due to the machine being out of order, or because he has put his money in the machine and has not received goods in return. If the consumer is confronted with this problem too often, he soon develops the attitude that it is not worth the effort on his part to go to the machine and attempt to make a purchase.

Second, machine failures are also disconcerting to the location owner who usually becomes the intermediary between the irate customer and the operator. When this happens too often the operator is given notice to take his equipment off the premises.

Third, excessive machine failures create a burden to the working force of the operator and are an additional expense that sometimes can prove the difference between a profit or a loss on a particular location.

The general opinion of the operators interviewed was that the key to the breakdown problem lies in the route serviceman. If he is a competent individual who properly services the machines, the number of breakdowns is reduced to a minimum. It is also important that he be trained to handle minor repairs and minimize expensive emergency repairs. For machines that are operating twenty-four hours daily, someone must be available at all hours to handle emergency service calls. Usually the operators rotate this assignment among different people for a week at a time.

D. Technical Personnel

Each of the operators interviewed indicated that good repair people are difficult to find and harder to keep. One company stated that repair men are usually found by trial and error. Another company stated that sometimes good repair men could be "pirated" from competitors. Another source of repair men is the "technical hobo". This man will do work on a first-come, first-serve basis, similar to a plumber or electrician. This type of service is expensive and used by most operators only in an emergency.

Mr. Harry Schwartz of Automatic Cafeterias, Camden, New Jersey, says,

"We have found a very good source of recruiting maintenance men, and that is from the appliance field, being that their equipment is very similar to the type of equipment we handle." (15)

With the machine manufacturers making more complex equipment to perform more complex tasks, the responsibility of the operator, to have more capable repair people, has increased over previous years. The repair men must be able to perform adequate maintenance on all types of machines. If the operator is remiss in providing continuous repair service his "silent salesmen" will not function properly and he can lose not only sales but possibly the account.

E. Vandalism

All the operators interviewed reported vandalism occurred with their vending machines. The amount of vandalism varied from one operator to another. Those operators with a high percentage of sales

in cigarettes experienced more vandalism than those with a low percentage of sales in cigarettes. The operators reported that vandalism has decreased in the last few years, and they summed up their reasons as follows:

1. Improved equipment with additional safeguards that were not present before.
2. Greater respect for the machine by the location-owner who has supported its presence and will not tolerate any abuse given to the machine.

F. Selection

The selection of the appropriate vending machine is a difficult and important task, as the machines are usually needed for a variety of locations where they are used in a number of ways. What factors determine an operator's choice? The following list reflects the results of interviews with vending operators. The operators indicated that many of the factors were considered simultaneously and, therefore, the list is not in order of importance.

1. Merchandise capacity
 - a. Low initial cost
 - b. Capacity commensurate with the location
 - c. Low servicing cost
2. Choice of product
3. Flexibility of pricing
4. Simplicity of operation

5. Problems of installation

6. Original machine cost

Each of the factors affecting a vending machine selection is discussed below.

1. Merchandise capacity - In determining what is the right merchandise capacity for a machine, three objectives are sought: a. low initial cost, b. capacity commensurate with the location, c. low servicing costs.

The initial cost of the machine is normally dependent on the capacity of the machine, and it is here that low cost and high capacity are in conflict. More of the manufacturers are standardizing their lines of equipment, and as the manufacturer's technology improves, machines are able to handle a greater capacity without an accompanying price increase. The price of the vending machine appears to be more dependent on what mechanical and electrical functions it can perform.

The capacity of a machine should be commensurate with its location. It would be a tremendous waste to place a 2400 cup coffee machine in an office with maximum sales of 80 cups per day, when a machine with smaller capacity would serve the location very adequately. The operator has to purchase machines whose capacity will economically serve a given location. This assumption means that operators will have to seek other manufacturers than they are presently buying from to obtain the desired capacity. One operator in Boston finds that he can maintain company versatility by using good secondhand machines of

varying capacity in certain locations, placing larger more modern equipment in his better locations. At a later date, if he sees fit, he can upgrade the machines, and in this way he reduces his expenditures for new equipment.

By gauging what capacity machine is best suited to a location, the operator reduces the number of service calls he has to make. An example is the case of the cigarette vendor switching many of his machines with 300-pack capacity and twice a week servicing to 700-pack capacity and once a week servicing, thus reducing by half the number of times the machines have to be serviced. Some machines have a storage area for additional merchandise, but this still necessitates someone moving the merchandise from the storage area to the vending rack. If not done by the serviceman, it has to be done by an outsider who often times cannot be relied upon. This latter condition might not exist if the location were receiving a sizeable amount in commissions.

2. Choice of product: It is important in mass feeding, where a greater volume of people patronize the vending machines than before, that there be a fairly substantial selection of such items as soup, sandwiches, hot platters, candy, coffee (such as coffee with cream, sugar or black, etc.) and beverages. Multiple unit machines, which vend a choice of products from a single machine, normally outsell a machine that vends only one choice. If the operator were to confine himself to single unit machines, his initial cost would be exorbitant, in that he would need a separate machine for each type of product vended.

At Waynesboro, Virginia, General Electric Corporation operates its Specialty Control Department, a plant which employs approximately 1000 people. VEND magazine reported that at this plant,

"Menus are varied widely and deliberately, not only to test items for popularity but to provide variation in diet. For example, a total of 85 different sandwiches has been offered at one time or another." (16)

At the North Electric Company in Galion, Ohio,

"Variety is the key to food service in the 10 vending machines. This battery offers three selections of hot and cold sandwiches, three choices of hot foods such as chili, stew or spaghetti, three types of hot soups, a selection of three chilled salads, plus ice cream, pastry, cold drinks, coffee, tea and milk." (17)

3. Flexibility of pricing: The problem of fixed prices on vended items is a thing of the past, as the machine manufacturers have developed a multitude of coin combinations that can be used on various types of machines. This is an important feature as it allows the operator to recover some of the increases passed along to him by his suppliers and the increased cost of doing business in general, or to increase prices just to see if he can increase his profit.

At the present time the A.B.T. Manufacturing Corporation, a subsidiary of the Atwood Vacuum Machine Company, and National Rejectors, Inc. are the firms marketing a currency changer that accepts a dollar bill, vends merchandise, and pays out the correct amount of change, all automatically. As soon as these machines are fully utilized by the vending operators, they should aid in increasing sales.

The following statement made in the October 30, 1959 issue of *PRINTERS' INK Magazine*, page 65 supports the previous remarks.

"The A.B.T. bill-changer has been tested by three major full line venders. It has also been used successfully at Chicago's O'Hare and Midway airports, the Harris Bank in Chicago and at the cafeteria in the Seagram Building in New York.

"Even in limited application, the bill-changer seems certain to help increase the sales volume of more than 4 million vending machines now in use."

The Automatic Canteen Company of America is testing the salability of 15¢ and 25¢ candy bars, and cite their reasons as: 1. higher product cost, 2. diversification into higher priced items, 3. the development of improved machines and coin handling mechanisms.

4. Simplicity of operation: Most American machines in operation today are designed so that the consumer can receive the vended merchandise with a minimum amount of effort. This is in contrast to the European machines where the consumer must do more in the purchase of a vended item. No matter how simply a machine is designed, some consumers will be confused as to its operation. The more vending machines that are placed in locations and the more the public is exposed to them, the less confusion there will be as to how they operate.

5. Problems of installation: Vending machines are not difficult to install as they usually require a water line or some electrical wiring to make them operable. Some locations have special requirements such as building a wooden structure to house a bank of machines that will be located outdoors. This was a requirement for installation

of machines in the Boston Naval Shipyard. In the newer plants, areas have been set aside for automatic cafeterias, and many firms are consulting with vending operators as to what the space requirements should be for an automatic cafeteria. This has reduced the cost of installation of vending equipment in newer plants.

6. Original machine cost: The original purchase price is a factor in selecting any piece of equipment, and what interests the operators is how long it will take the equipment, through the sales revenue it produces, to return the initial capital investment. If two machines of different prices are comparable as to capacity and quality of product they can vend, the one with the lower price is more desirable, as the original cost of the machine can be returned in less time. This latter fact is important because the equipment that is sold today usually becomes obsolete in approximately two years. A few of the operators in Boston say that if the original capital investment is to be returned in two years, it will be necessary for gross annual sales to be three times the cost of the equipment. With machine prices rising each year, it has become necessary for operators to pick their locations carefully when placing banks of machines, in order to insure a proper relationship between sales and costs. Because of rising prices in new machines, the market for good secondhand machines has been good and in some instances these secondhand machines are sold for more than their original purchase price.

G. Summary

If a vending machine stops due to electrical or mechanical

failure, there is usually a time lapse of two to twenty-four hours before correction. If the vending machine is sold out, it may be twelve to twenty-four hours before it will be refilled again. In every location the writer visited, he found either a particular selection sold out or a machine out of order. Sold-out selections indicate good volume but how many sales were lost after the selection was empty? The machine is a potential twenty-four hour salesman, and if not selling for any given period of time, its potential cannot be reached, and this may mean the difference between a profitable and an unprofitable operation.

Some of the advantages and disadvantages of vending machines have been noted, but it should be realized that each year the operator has been given an opportunity to purchase a better vending machine. The responsibility for the development of better vending machines rests with the machine manufacturer, who is discussed in Chapter III.

III. MACHINE MANUFACTURERS

The vending machine manufacturers are a major factor in determining how far and at what rate mass feeding will progress. The burden of the technical development of adequate machines to vend the meals of mass feeding is the responsibility of the machine manufacturer.

The bulk of the vending machine manufacturers are located in Illinois, Missouri and New York, with several of the large companies producing approximately 75-85 per cent of the total sales in the industry. The only vending machine manufacturer in the Boston Area is the I.V.I. Corporation of Woburn that recently developed a one-cup-at-a-time fresh brew coffee machine.

In recent years there has been a great change occurring at the manufacturing level. Family-owned manufacturing businesses are giving way, through mergers and consolidations, to larger, diversified companies whose stock is offered to the public. The year 1959 saw the following examples: Vendo Manufacturing Company purchased Stoner Manufacturing Company of Aurora, Illinois for \$2,500,000; Universal Match Corp. acquired the balance of National Rejectors' stock; Universal also purchased S. G. Adams Company, a contract manufacturer which itself had earlier purchased the dry ingredient Barvend coffee unit; The Seeburg Corporation acquired the Bert Mills Corporation and Lyon Industries. (18) In each case above, the seller was privately held and the buyer was a public corporation. In 1960 there were more mergers, with some of the public corporations combining their operations. For example,

Universal Match Corporation acquired Glasco Corp., maker of vendors of soft drinks and milk machines (19); Williams Electronic Mfg. Corporation purchased the rights to manufacture the Schroeder I.V.I. fresh-brew coffee machine from Schroeder Industries, Inc. (20). Presently, Universal Match Corporation and Universal Controls, Inc. are negotiating a merger (21).

Each succeeding year finds fewer companies manufacturing vending machines, as the machine manufacturers consolidate, primarily to obtain rapidly a diversified or "full line" of machines in a highly competitive market.

It is expected that the parent company resulting from these mergers will be in a better financial position to engage more heavily in research and development than the individual companies could prior to the merger or consolidation. The Automatic Canteen Company of America doubled their expenditures from 1958 to 1959 for research and development, and there is no doubt that a greater portion of the increase was spent on the Rowe Manufacturing Company which was merged with Automatic Canteen in 1955 (22).

The manufacturer plays an important part in the growth of mass feeding by the development of more modern equipment to dispense a greater variety of food products than ever before. At the present time the machine manufacturers are attempting to perfect a machine that will store a complete T.V. dinner in a refrigerated zone and at a predetermined time, move it automatically to a heating area which

will cook and dispense the meal. Once perfected, this type of vending machine has the capability of increasing the volume of dollars spent in mass feeding locations throughout the country.

There were many innovations and improvements brought forth by vending machine manufacturers during the year 1960. The following are examples:

1. Introduction of paper money changers
2. Soft drink "ice-maker" machines were placed on the market
3. New models of "variety venders" offering wide selection and greater product visibility were placed on the market
4. Machines vending individually brewed cups of "fresh" coffee were introduced
5. Vending machines took on a more uniform look as the manufacturers paid attention to design and appearance. Every manufacturer of diversified lines now offers the customer a unified "bank" of machines.

It cannot be denied that in 1961 the vending machine manufacturers met the challenge to produce better equipment, but the greatest technical problems are in the future as the manufacturer attempts to perfect equipment that will aid the vending operator in obtaining more of the mass feeding market. This equipment will have to be capable of serving hot foods which could be stored for a considerable period of time, from 7 to 30 days, prepacked, in a refrigerated, dehydrated or some specialized state.

Allowing the necessary time, there is no reason to doubt that eventually such ideal equipment will be developed. It will probably be electronic and will be able to bring stored foods almost instantly to a steaming hot and tasty condition, and serve them very quickly just by the push of the button.

IV. THE VENDING OPERATOR

A. Background

This chapter is concerned with the vending operator who, by definition, is the individual or business who, by contract, agreement or ownership, takes responsibility for furnishing, installing, servicing, operating or maintaining one or more vending machines on the premises of a location-owner.

The sample of vending operators interviewed was selected in the following manner:

1. A listing of all vending operators was taken from the yellow pages of the Greater Boston Telephone Directory. The number shown in the directory came to 62. This group was matched to the list of vending operators in the 1960 Annual Issue of the National Automatic Merchandising Association to determine if the list from the telephone directory was complete. There were no additions necessary.
2. Those vending operators whose company name indicated that their vending operation was specialized, i.e., cigarettes, bulk peanuts or music only, were telephoned to determine if they were engaged in any type of mass feeding operation. This reduced my sample to 23 vending operators.
3. Of the 23 remaining vending companies, 12 agreed to an interview. The companies and the principals interviewed

are shown in Exhibit VI, page 36.

Mr. Alfred Cutter, Treasurer of Allied Vending Engineers and active in the vending industry in Greater Boston since 1949, said that in his opinion the twelve firms represented 75 per cent of the total vending sales, 95 per cent of the sales for automatic mass feeding, and these same twelve firms employed approximately 80 per cent of all the people working in the vending industry in Greater Boston. Upon his recommendation I considered the twelve companies to be representative of local vending operations.

In this chapter a three step approach will be used. First, there will be a summary and appraisal of information received from interviews with vending operators. Second, an evaluation of the information received in the interviews and conclusions drawn. Third, the subject of commissaries will be discussed as a separate subject because of its increased importance in the vending industry.

The questionnaire for vending operators, shown in Appendix A, page 136, was used as a guide in conducting the interviews. Answers to the questions were not always directly to the point and in many cases the interviewee declined to answer because the answers were not available or for competitive reasons.

B. Summary of Data Received from Interviews with Vending Operators

The following is a summary of the data received from interviews with twelve vending companies in the Greater Boston Area.

EXHIBIT VI

Companies Interviewed

<u>Company</u>	<u>Principal and Title</u>
Automatic Food Services, Inc.	Mr. Arthur Galer, Manager
Allied Vending Engineers	Mr. Alfred Cutter, Treasurer Mr. Harold Cutter, President
Automatic Merchandising Corp.	Mr. Bert Steir, Vice-President
Automatic Canteen Corp.	Mr. Paul Lunt, Branch Manager Mr. Frank Schwartz, Sales Manager
Coffeemat Corp.	Mr. Sidney Wolbast, President
National Food Vending	Mr. Louis Graceffa, President
General Automatic Vendors, Inc.	Mr. Vincent Polo, President
American Vending Co.	Mr. Morris Weinbaum, President
Servend Company	Mr. Louis Adams, General Sales Manager
Gloverleaf Automatic Gaters	Mr. Calbucci, President
A.B.C. Vending Co.	Mr. Samuel Covins, Office Manager
Metro Vending Co.	Mr. S. M. Goran, President

1. What year did your company start operations?

Ten companies started in the period 1937-1949. Two companies began operations in the period 1950-1955. Although not old companies by comparison with other industries, the group of vending companies interviewed are well established when compared to other companies in the industry.

2. Type of business organization

One operator is a sole proprietor, and the remaining eleven indicated they are corporations. The sole proprietor does not employ anyone in his business. See question 6 for a discussion of the stock of the vending companies.

3. Number of people employed in the firm

One company employed none, one employed less than eleven, eight employed from twelve to thirty-five people and two firms employed more than 200.

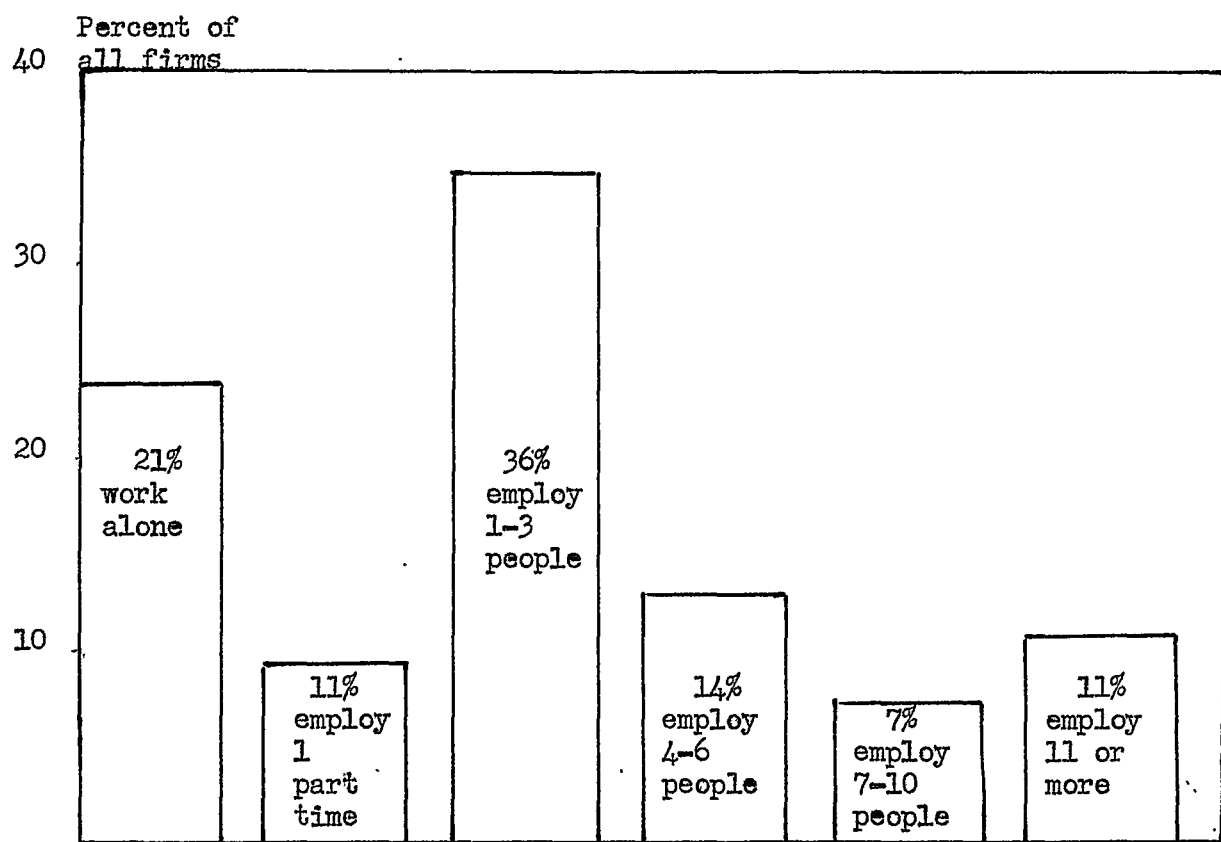
It appears that the firms interviewed employ more people than the average of vending operators, as shown in Exhibit VII, page 38.

This could be due to the following reasons:

- a. Sample is not large enough.
- b. The firms interviewed are all engaged in automatic mass feeding and this type of operator required more people than the operator of automatic cigarette or candy machines.

EXHIBIT VII

How Many People Operating Firms Employ



SOURCE: VEND Magazine, Market Data, March 15, 1961, page 32.

c. This may be an indication that the Greater Boston firms have been more progressive in expanding their operations either through mergers or through extra sales effort.

4. Percentage of personnel working in the various functions of the company

Three firms declined to answer this question directly, but nine did categorize their people and the percentages reported in each category are as follows:

Management	20-25%
Drivers	30-35%
Technical	15-20%
Sales	5-8%
Clerical	8-10%
Others, i.e., Cleaners Hostesses	1-2%

In the smaller companies the lines of responsibility are not clearly defined and some personnel perform dual functions, as in the American Vending Company where the single worker performs all functions.

5. Membership in industry organizations

All the vending operators interviewed are members of the Massachusetts Automatic Merchandising Association, but only eight are members of the National Automatic Merchandising Association.

The four operators who are not members of the N.A.M.A. felt that it was not necessary to belong as they felt that they did not derive

any benefit from the association.

6. Status of the stock of the company

At the time of the interviews (1959-1961) two companies had their common stock traded on the New York Exchange, two traded in the Over-the-Counter market and eight companies were privately held. After the interviews five of the companies whose stock was privately held were acquired by two larger companies not previously operating in the Greater Boston Area. These two companies are the Automatic Retailers of America and the American International Bowling Corporation. See Chapter VII mergers.

7. Total sales volume

The operators would not reveal any statistics regarding their annual sales volume. The Automatic Canteen Company and ABC Vending Company maintain branches in Greater Boston and sales figures are not released by area but only in total in their companies annual reports.

8. Comparison of 1960 and 1961 sales volume

All companies interviewed indicated their sales volume in 1961 was greater than that of the same period in 1960. There was no indication of what percentage they grew in the 1960-1961 period.

9. Is your business seasonal?

The operators were unanimous in saying that their business was not seasonal because of the diversification of products

vended (non-reliance on ice cream or soft drinks). The operators did indicate that the summer months tended to show lower sales, because:

- a. Vacations in plants
- b. Coffee sales were slower in summer

November through March tended to be better months for vending sales because items a and b become positive factors contributing to sales.

10. What make vending machines do you purchase?

The operators indicated that they purchased the following types of vending machines. The machines are listed in order of the frequency mentioned.

- | | |
|----------------|------------------|
| a. Vendo | f. Rudd-Melikian |
| b. Stoner | g. Bally |
| c. Continental | h. Schroeder |
| d. Wittenborg | i. Kwik-Cafe |
| e. Rowe | |

Vendo and Stoner both manufacture complete units composed of various types of vending machines. The operators are able to purchase from one manufacturer their needs for a particular location. The main advantages are:

- a. Uniform appearance
- b. Maintenance is easier because machines in the grouping have similar characteristics
- c. Better price to buyer on volume purchase

11. Are you engaged in full line vending?

Although a positive answer was a prerequisite for the interview, this question was asked as a means of introducing the subject into the interview.

All the operators indicated they are engaged in full line vending with the number of locations having full line vending ranging from 1 to over a 100 complete installations. The average for the companies was closer to 10 as Servend and Automatic Merchandising were the only companies reporting over a 100 full line installations.

Although all operators reported they are engaged in full line vending, none were yet selling complete hot meals from a vending machine. It appears that to the operator full line vending means the selling of sandwiches, coffee, soup, pastry, milk, candy and cigarettes from one bank of machines. The operators felt it would be some time before they could sell hot meals from a vending machine that would be adequate in terms of quality and be profitable to the vendor.

12. Gross receipts by type of product

The operators were reluctant to reveal information regarding gross receipts by type of product. Most operators agreed that coffee, cigarettes and milk accounted for almost 50 per cent of gross receipts. The remaining 50 per cent was divided between sandwiches, pastry, candy, ice cream, soft drinks and hot foods. According to VEND magazine estimates of 1961 vended sales volume, coffee, cigarettes and milk accounted for 52 per cent of the total sales volume. It appears that the local companies are presenting the same breakdown by product

as is reported for the nation as a whole.

The operators indicated that the vending of hot foods is still in the testing stage as far as they are concerned, and when a location requires hot meals they offer the combination of automatic vending and manual facilities.

Automatic Canteen has introduced "countervend" which is described as "a combination of automatic and manual food serving equipment able to provide the exact type of service required to meet any conceivable need." (23)

13. How does the operator finance the purchase of vending machines?

In Greater Boston the Automatic Canteen Company and the A.B.C. Vending Company receive their financing from their home offices. The other ten firms indicated that the most popular method is through the banks, with the machine manufacturers the next most popular method of financing.

For further discussion of this subject, see Chapter VII, Section A.

14. Average rate of interest paid on loans

The operators indicated that in 1960-1961 they paid an average interest rate of 6 per cent. The loans are repayable in monthly installments and the effective rate is over 9 per cent. For further discussion of this subject, see Chapter VII, Section A.

15. Factors influencing the selection of vending machines

According to the vending operators, the four most important factors influencing their selection of vending machines in order of frequency mentioned are:

- a. Capacity (dependent on location)
- b. Cost
- c. Manufacturer
- d. Simplicity of operation

The operators seemed to be most concerned about placing the appropriate capacity machine in the different locations. The problem of frequency of servicing and product turnover, both related to the capacity of the machine, was of prime concern. Some locations with small size machines require servicing every day or many sales are lost because of empty machines. It is important to obtain the right balance between the factors of size of the machine and product turnover at the location or else the servicing of the machine can make the location unprofitable.

The factors of cost, simplicity of operation and the manufacturer concerned the operators in varying degrees. It appeared that the operators selected some of their equipment by chance rather than through a careful process of analysis.

16. How did the business originally start?

Two firms started as cigarette vending firms, eight as candy and ice cream vending firms, one as a restaurant and one as a truck canteen service firm.

17, 18, 19. Commissaries

This subject is discussed separately at the end of Chapter IV:

20. Do you operate a manual feeding division?

Locally the Servend Company was the only vending operator that had a manual feeding division. The Servend Company declined to give further details on this phase of their operation. The Automatic Canteen Company has recently purchased Nationwide Food Service Inc. to provide their customers with manual feeding service (Countervend). Automatic Retailers of America who recently purchased Allied Vending Engineers and Automatic Food Services, Inc. also purchased the Slater System, a manual feeding firm with 70 million of annual sales.

It appears that the trend that is now emerging is one of the vending machine companies purchasing manual feeding firms in order to become competitive in those plants where there are manual feeding facilities. This situation has been caused by the slowness of the vending industry in being able to offer a palatable hot meal through an automatic vending machine.

21. Do you sometimes engage in manual feeding through another firm?

Allied Vending Engineers and the Automatic Merchandising Corporation are the only firms subcontracting with manual feeding firms. It is possible that since Allied Vending Engineers is now a part of Automatic Retailers of America, they will not subcontract the

manual feeding facilities. VEND Magazine reported that in 1960 three per cent of all operators do 50 per cent or more of their volume on sub-contract. Figures on Greater Boston were not available for comparison. The standard procedure for subcontracting is for the vending firm to bid on all the feeding facilities of a location and then if successful to operate directly only the vending machines and subcontract the manual feeding portion with a firm primarily engaged in this type of operation.

22. In what type locations have you placed machines?

Ranked in order of predominance of machines, the locations are:

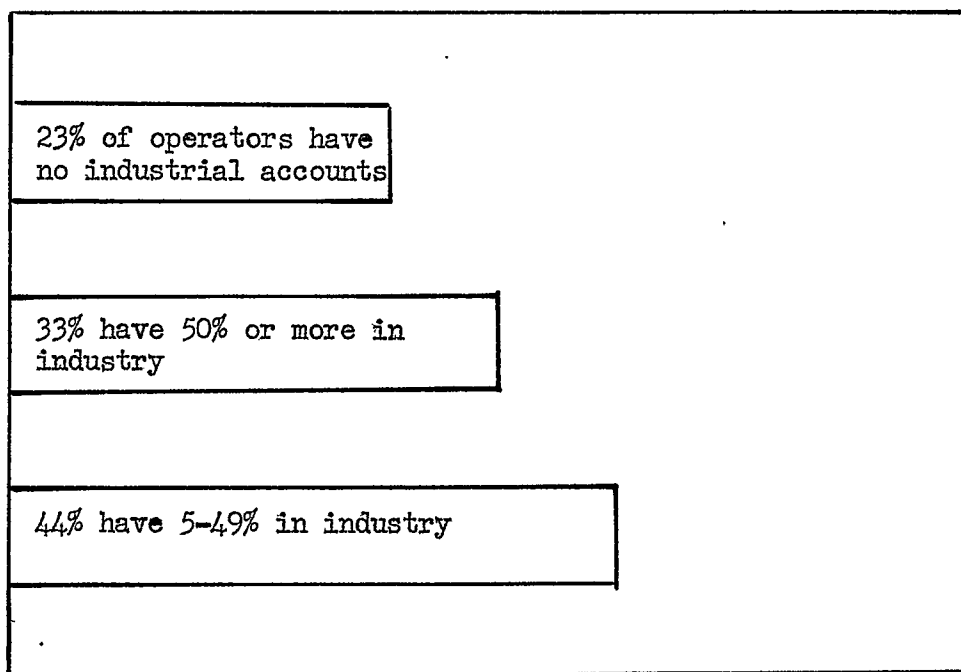
- | | |
|-------------------------|------------------------------|
| a. Industrial plants | e. Hospitals |
| b. Office buildings | f. Gasoline stations |
| c. Schools and colleges | g. Shipyards |
| d. Bowling alleys | h. Railroad and bus stations |

The results compare with VEND Magazine's survey that reported eight out of ten of the nation's industrial plants have some kind of vending machine on their premises. Exhibit VIII, page 47 shows the percentage of operating firms with industrial outlets, as reported by VEND Magazine (24).

The operators reported that schools and colleges are normally very profitable locations. The recent popularity of bowling has increased the interest in bowling alleys as vending locations. The American International Bowling Corporation has machines in all of their

EXHIBIT VIII

Percentage of Vending Operators with Industrial Outlets



SOURCE: VEND Magazine, Market Data, March 15, 1961,
page 41.

bowling alleys and they have indicated they will place more machines in this area as their bowling operations expand.

23. Contracts with location-owners

All of the operators indicated that they had contracts with most of their location-owners. The subject is covered more completely in Chapter V.

24, 25. Commissions

The commissions paid to a location-owner are of major concern to the vending industry and are discussed in detail in Chapter VII, Section B.

26. Training programs

The vending operators in Greater Boston primarily concentrate their training efforts on new route drivers. The route driver is usually in daily contact with the location-owner and how well he performs his job of servicing the vending machines is reflected by the efficiency of the machines on his route.

The technical personnel are usually obtained from the staff of route drivers who have been exposed to a myriad of operating problems and have gained practical experience.

In the smaller companies the functions of sales and management are combined, and it is only in the companies that employ 25 to 30 people that there is a sales force operating apart from management.

The training programs as they are presently conducted by the vending operators are in the form of on-the-job training. The branch

offices of large firms are usually staffed with experienced people trained in the home office and sent out to the branches. The larger firms usually can more effectively utilize the talents of their experienced and more capable men by transferring them between the various branch offices.

27. Analysis of profit or loss at each location

The smaller firms indicated that they made rough estimates as to profit or loss for some of the locations. The larger firms, such as the Servend Company and Automatic Merchandising Corporation, performed actual profit and loss calculations for each location.

The operators agreed that many locations are only marginal in terms of profit but are maintained because the future potential is greater than present sales; thus, profit and loss calculations are not always meaningful.

28. Factors determining the desirability of a location

The operators indicated that they used the following factors to determine the desirability of a location. The factors are ranked according to the number of times they were mentioned by the operators.

- a. Number of people
- b. Size of location
- c. Type of activity at the location
- d. Traffic at the location
- e. Length of lunch time

It appears that the operators are first concerned with potential sales volume as determined by the number of people at the location. They then become concerned with the size of the location in order to evaluate the number of machines needed to properly service the location. A third consideration is to consider the type of activity that is at the location. Salaries differ between industries and high paid employees are more prone to spending than lower paid employees. The fourth consideration is the traffic passing by or through the location, which can appreciably increase sales. The last consideration is the length of the lunch hour allowed people at the location. To feed 5,000 people working one shift and having a staggered one hour lunch period from 11:00 a.m. to 2:00 p.m. requires less vending machines than feeding the same number of people with only half hour lunch periods.

29. Do you contribute to the "Operating Ratio Report"?

Only the Automatic Merchandising Corporation contributed to the "Operating Ratio Report" as prepared by Price, Waterhouse accountants.

Mr. Steir, Vice-President of Automatic Merchandising Corporation, indicated that they were a large contributor of money to this particular project and for this reason they were reluctant to release figures from the report.

Figures from the "Operating Ratio Report" are published in part by VEND Magazine. Those figures made available are quoted where appropriate in the body of the thesis.

30. Use of paper currency changers

At the time of the interviews the operators were experimenting with the use of paper currency changers. Since the interviews, the operators have been using paper currency changers in the larger installations, and the writer recently visited some installations and observed the successful use of paper currency changers for denominations up to five dollars.

It is expected that sales heretofore lost because of a change problem will now be solved by the advent of the paper currency changer.

31. Machine vandalism

There seemed to be a correlation between the number of cigarette vending machines in use and the amount of vandalism an operator experienced. Cigarette vending operators reported more incidents of vandalism than operators who were more diversified as to products.

The operators also stated that machines placed outdoors or in areas where the people using the machine do not have an employer-employee relationship with the location, show an increase in vandalism.

32. Are machines checked by the Health Department?

The operators indicated that their milk machines are inspected by the local health departments, and depending on which health department is involved, the inspection may be frequent or infrequent.

Because of the importance of sanitation in food vending the subject of health departments is discussed separately in Chapter VII, Section D.

C. Conclusions Resulting from Interviews with Vending Operators

It is important to note some general characteristics and trends in the Greater Boston Area:

1. The national vending concerns have moved into the area through acquisitions and mergers so that there are now fewer large independent operators. The future growth of automatic vending in Greater Boston will be dependent on the amount of effort the national concerns feel is necessary to capture their share of the available market.
2. Innovations in the automatic vending industry will reach Greater Boston more rapidly than in previous years because of the larger size of the operating companies who have the capital and management ability to make the innovations profitable.
3. There will be increased competition between the manual cafeterias and the vending operators who have manual feeding divisions. The national concerns have the ability to provide both the automatic and manual services from a single source. Examples are Automatic Canteen's "Countervend" and Automatic Retailers of America's "Vendterias".

These are a few of the changes that will take place in the next few years, and it is expected that the vending operators will be forced to keep abreast of the new developments or face the possibility of being forced out of the vending business.

D. Commissaries

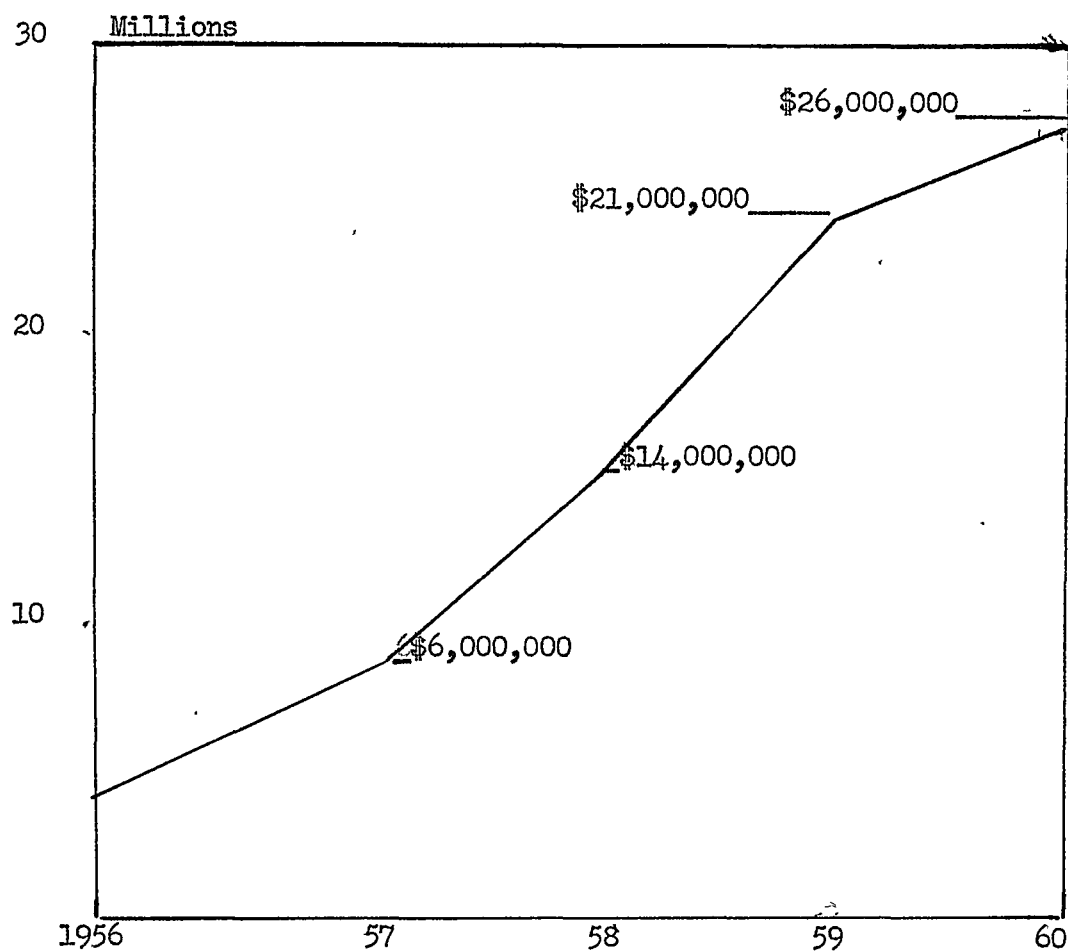
As operators of mass feeding locations expand their locations and dispense more hot foods, whether or not they should operate their own commissaries becomes a problem.

In the past, vending operators had a small volume of sales in the hot food, sandwich or pastry lines, and the operator would usually purchase these items from an outside source. As the operator's sales volume of commissary type items increased, he considered operating his own commissary. See Exhibit IX, page 54 for growth of food vending.

Of the twelve vending operators interviewed, nine had commissaries where they prepared many varieties of sandwiches, pastries and doughnuts. The number of personnel working in the commissaries ranged from one employee part time to ten employees full time. The Automatic Merchandising Corporation of Medford operates five commissaries throughout the New England area. The Servend Company also maintains several commissaries, some of which are located in the location-owner's establishment. The Servend Company indicated that they are operating a commissary in an industrial plant in New York State that employs 2500 people. The result is that the Servend Company is able to serve fresh food, still hot, from a commissary located a few yards from the dispensing area. This procedure has resulted in increased sales volume and a reduction in shipping and rental expense that would be part of the cost of operating a separate commissary. The supplies are shipped direct and the employees report to the plant commissary for work.

EXHIBIT IX

Estimated Dollar Volume of Hot Foods Vended in the United States
1956-1960



SOURCE: Directory of Automatic Merchandising, 1956-1960

Of the nine vending operators who said they had commissaries, all indicated they would expand their commissary if their sales volume showed an increase in commissary type food items. Automatic Merchandising Corporation and Servend Company are expanding their commissary operations geographically to meet the needs of their customers in widely separated areas. The seven other vending operators were operating out of a single commissary with the drivers picking up the necessary amounts of food in the morning to properly serve their routes during that day.

For what reasons do the operators maintain a commissary?

The first reason is that the operator can control quality, manufacturing as much of different varieties as he desires, and not be confined to the production of an outside firm. This control allows the operator a chance to test the products and capitalize on those items which are the best sellers.

The second reason is that the production of food in the operator's commissary sometimes produces a lower-cost product which allows him a greater return on product turnover. Figures were not made available by the operators to determine if this reason is an entirely valid one.

The final and most important factor is that the operator has greater control over the quality of the product than he has with an outside firm. The production of foods can be geared closer to the time they are expected to be sold, thus insuring freshness by reducing the

period in which the food is in transit.

As operators expand their mass feeding services, the integration of commissaries into vending operations will be more common. VEND Magazine in the March 1961 issue reported that "18% of the companies in food vending have some type of commissary. The remaining 82% buy all their vended foods outside." The operating companies interviewed in the Greater Boston Area showed a greater percentage having their own commissary. The difference is probably because the sample of vending companies in this thesis is confined to one large city where the companies have had extensive merger activity (See Chapter VII).

Mass feeding through automatic vending machines implies only that the food is dispensed automatically. There are many and varied services that have to be performed manually by the vending operator to make a successful automatic cafeteria. Among these are sound preparation of the foods that are to be dispensed, rotation of food items and proper maintenance of the dispensing equipment.

It is the preparation and rotation of foods that require the services of a responsible, experienced person. Manual feeding firms normally employ a dietitian to supervise these functions, and it is anticipated that the vending operators will need dietitians for their commissaries. Mr. Davre Davidson, President of Automatic Retailers of America, stated that:

"ARA operates 600 integrated kitchens on customer premises. In addition, the company operates a string of commissaries across the country where food is prepared for delivery to customers. ARA now takes care of all the feeding in about

100 hospitals, as well as an impressive roster of big manufacturing plants, schools and government institutions. Because of the responsibility of feeding such a range of people, ARA has more trained dieticians on its staff than any organization except the U.S. Government." (25)

It appears that if the automatic vending operators want to successfully enter into the mass feeding field, they will have to institute an imaginative merchandising program that provides new and different products presented in a variety of appetizing forms. An important place that the operator can institute this program is in his commissary.

V. THE LOCATION OWNER

A. Background

The individual or business concern that exercises control over the location where vending machines are placed is defined as the location-owner. It is within the jurisdiction of the location-owner to encourage or discourage the use of vending machines as a means of feeding the persons who are employed at, or frequent, his place of business, whether it is a manufacturing, service, recreational, or institutional establishment. If the location-owner had not become convinced of the value of vending machines, either as primary or supplementary source of feeding, the vending industry undoubtedly would not have grown as it has, nor would the future be as bright.

What has caused the location-owner to utilize vending machines in his feeding operations? In general the causes are as follows:

1. The machines provide a service and a convenience to the customers of locations such as railroad terminals, airport terminals, bus stations, theaters and bowling alleys.
2. The machines provide a service and a convenience to the employees of the location such as in industrial plants, shipyards, office buildings and hospitals.
3. The machines allow the location-owner to free himself from an unprofitable or marginal operation (manual feeding).
4. The machine can be a source of income to the location-owner.

B. Location-Owner's Opinion of Mass Feeding

This next section examines in more detail the location-owner's opinions of mass feeding, using as a guide different studies made regarding the location-owner. They are in chronological order:

1. Study of employee food services conducted by Dun and Bradstreet for the U. S. Department of Agriculture (26).
2. A survey undertaken by INPLANT FOOD MANAGEMENT magazine to define the market characteristics of establishments receiving the magazine (27).
3. A study by FACTORY magazine on the top ten plants in the United States.
4. A survey made by the writer of various employers in Boston and Vicinity (Appendix B).

1. Summary of data from study by U. S. Department of Agriculture.

Dun and Bradstreet, who conducted the survey under contract to the U. S. Department of Agriculture, contacted 825 plants with 250 or more employees and conducted short telephone interviews with 213 plants having 100-249 employees. The study was made between December 1955 and April 1956 and covered the continental United States.

The major emphasis of the study was on food facilities other than vending machines, but information regarding the use of venders was obtained from all of the plants contacted.

Exhibit X, page 60 shows that in the sample of plants with

EXHIBIT X

How Plants Feed Their Employees*

Incidence of Food Facilities and Vending Machines in Manufacturing Plants with 250 or More Employees

Plant Characteristics	Food Facilities Only %	Vending Machines Only %	Both Food and Vending %	Neither Food nor Vending %	Total With Food Facilities %	Total With Vending Machines %	Plants (no.)
United States Total	4	40	48	8	52	88	825
<u>Employee Size Group</u>							
1000 or more	7	21	65	7	72	86	325
500 to 999	6	35	53	6	59	88	220
250 to 499	2	53	35	10	37	88	280
<u>Region</u>							
Northeast	5	46	39	10	44	85	275
North Central	3	37	54	6	57	91	270
South	5	32	57	6	62	89	163
West	6	45	32	17	38	77	117

* Source: U.S. Department of Agriculture, Marketing Service, Report No. 325, July 1959, p. 54,
Study made in 1954.

250 or more employees, fifty-two per cent provide some form of hot food service and eighty-eight per cent had vending machines. The larger the plant the more likely it was to have some sort of manual feeding facilities, but the size of the plant had very little to do with the use of vending machines. In plants with 250 to 499 employees, manual type food facilities were found in thirty-seven per cent of the plants, but eighty-eight per cent of the plants in the same size bracket had vending equipment. In plants with 1000 or more employees seventy-two per cent had manual food service, while eighty-six per cent had vending machines.

In those plants that offered only vending services, which was forty per cent of the sample, ninety-nine per cent of the plant executives interviewed said some of their employees brought their lunch to work; seventy-three per cent said some employees went to outside eating establishments; and twenty-three per cent said some of the employees used vending machines.

"The chief drawback", the study points out, "to providing (manual) food services was cost; forty-five per cent of the interviewers whose plants provided food services said they were too expensive to operate. However, it is also worthy to note that executives generally appeared to feel the facilities were worth what they cost."

It is important to note that only a small percentage of plants operate manual food services to the exclusion of vending machines. "About nine out of every ten plants with 250 or more employees were making beverages or food available in vending machines."

Among the major sample plants interviewed, 48 per cent had both manual and vending machines; 40 per cent had only vending machines; 4 per cent had manual but no vending machines; 8 per cent had neither manual nor vending machines.

Although small plants were as likely to have vending machines as large plants, the smaller plants were less likely to have food or milk vending machines and did not offer a variety of items. This is due to the high breakeven point on food and milk machines and the lack of sufficient consumer traffic in small plants to support more than a few basic machines. See Exhibit XI, page 63.

The study showed that in plants without a manual operation, vending machines played an important role; however, it also added that plants without manual food services were a little less likely to have vending machines, but those that did, tended to have more extensive installations.

How do the executives of the various plants feel about vending machines? About nine out of ten executives cited advantages stemming from the installation of machines, and eight out of ten said they saw some disadvantages. At the same time it was noted that seven out of ten plant managers did not like some phase of manual food services.

Exhibits XII, page 64 and XIII, page 65 are complete breakdowns of what the plant executives like and dislike about vending.

A summary follows:

What plant executives like about vending: 59 per cent said

EXHIBIT XI

What Items are Vended in Industry

Plants with Vending Machines: "At the Present What Beverages are Available in Vending Machines?"
 (If Milk not Mentioned) "Is Milk Available? What Foods are Available?"¹

Responses	Plants with Food Facilities					Plants Without Food Facilities	
	United States	Employee Size Group	Form of Operation		Company Contracted		
	Total	1000 or more	500-999	250-499			Company Operated
	%	%	%	%			%
Soft drinks	90	90	89	91	92	90	94
Candy, peanuts, gum	81	86	76	79	84	80	80
Coffee	39	50	27	37	39	37	55
Milk	25	33	26	20	28	23	43
Cookies	19	19	23	15	17	19	33
Ice cream	18	20	10	20	16	18	29
Hot chocolate	8	10	4	7	5	9	11
Fruit juices	5	8	4	4	3	6	14
Sandwiches	2	7	1	-	3	2	12
Pastry, pie, cake	2	2	-	3	4	1	11
Soup	2	2	2	1	2	2	9
Fruit	1	2	1	-	2	1	5
Miscellaneous	1	1	1	-	-	1	1
Number of Plants	353	164	100	89	117	239	66

1 Percentages add to more than 100 because of multiple answers.

SOURCE: U.S. Department of Agriculture, Marketing Service Report No. 325, July, 1959, p. 72.
 Survey made in 1954.

EXHIBIT XII

What Plant Executives Like About Vending

"In general, What Would you Say are the Good Points of Having Vending Machines in a Plant -
What Advantages Do you See in Them?"¹

Responses	Plants with Food Facilities				Vending Machines		Plants Without Food Facilities
	United States	Employee 1000 or more	Size Group 500- 999	250- 499	Now Have	Do Not Have	
	Total %	%	%	%	%	%	%
No advantages mentioned	12	11	14	8	6	67	12
Some advantages	88	89	86	92	94	33	88
Improves employee morale	55	51	50	64	59	-	67
Keeps employees near work (saves production time)	36	41	32	34	38	-	29
Supplements regular or outside feeding facilities	19	18	20	20	20	-	2
Provides employee pickup	9	10	8	8	10	-	8
Lower costs than other feeding facilities	8	9	9	5	9	-	2
Produces revenues	5	5	8	1	5	-	6
Outside operators have full responsibility	4	4	4	3	4	-	4
Saves space	1	1	1	3	2	-	-
More sanitary foods and better housekeeping	1	1	2	1	2	-	3
Miscellaneous	1	2	1	-	1	-	4
Number of Plants	391	184	113	94	353	38 ²	77

1 Percentages add to more than proportions mentioning advantages because of multiple answers.

2 Cases too few for analysis

SOURCE: U.S. Department of Agriculture, Marketing Service Report No. 325, July, 1959, p. 74.
Survey made in 1954.

EXHIBIT XIII

What Plants Executives Dislike About Vending

"What Would you Say are the Drawbacks or Disadvantages of Having Vending Machines?"¹

Responses	Plants with Food Facilities				Vending Machines		Plants Without Food Facilities
	United States Total	Employee 1000 or more	Size 500-999	Group 250-499	Now Have	Do Not Have	
	%	%	%	%	%	%	%
No disadvantages mentioned	19	21	20	18	19	13	20
Some disadvantages	81	79	80	82	81	87	80
Housekeeping problems	44	40	45	48	43	-	46
Too much time lost	32	36	31	28	30	-	36
Unreliable servicing of machines	25	22	28	25	26	-	14
Vandalism, pilferage	9	7	12	8	9	-	2
Takes too much space	7	8	7	7	7	-	10
Cost of operation exceeds revenue	2	1	2	4	-	-	2
Employee complaints	2	4	1	2	2	-	* ²
Limited variety of food	1	2	2	-	1	-	2
Poor quality of food	1	2	-	-	1	-	2
Rising cost of product in machine	1	1	-	1	1	-	-
Miscellaneous	*	-	-	1	*	-	2
Number of Plants	391	184	143	394	53 ³	38 ³	77

1 Percentages may add to more than the proportion mentioning disadvantages because of multiple answers.

2 Asterisk indicates less than 0.5 per cent

3 Cases too few for analysis

SOURCE: U.S. Department of Agriculture, Marketing Service Report No. 325, July, 1959, p. 75.
Survey made in 1954.

vending machines were a morale builder; 38 per cent said they saved production time by keeping employees near work; 20 per cent said they supplemented other food services; 10 per cent said they provided an employee pickup; 9 per cent said they cost less than other food services; 5 per cent said they produce revenue; 4 per cent said operators had all the responsibility.

What plant executives dislike about vending: 43 per cent complained of housekeeping problems; 30 per cent said too much time was lost at the machines; 26 per cent said servicing was unreliable; 9 per cent complained of vandalism; 7 per cent said machines took too much space; 2 per cent said machines competed with other services; 2 per cent were bothered by employee complaints.

The Agriculture Department study found that despite the disadvantages that were cited, most plants were thinking in terms of expanding their use. See Exhibit XIV, page 67.

2. Summary of data from survey by INPLANT FOOD MANAGEMENT

During the spring of 1960 INPLANT FOOD MANAGEMENT conducted a survey "of the places or establishments represented by the magazine's readers." The survey did not indicate the number of establishments in their sample except to say that the study "was made on a more than adequate cross-section of the market."

The survey revealed that 83 per cent of the establishments comprising the in-plant market have vending machines offering various products to employees.

EXHIBIT XIV

Plants with Vending Machines: "Are you Planning to Add or Decrease in Number or Capacity Any of the Kinds of Vending Machines you Now Have? If So, Which Ones? Are you Planning to Add Any New Kinds of Machines? If Yes, What Kinds?" ¹

	United States Total	Employee Size Group 1000 or more	500-999	250-499	North-east	Region North Central	South	West	%
	%	%	%	%	%	%	%	%	%
Plan no changes	79	75	82	81	80	79	81	82	79
Plan decreases	2	1	3	1	3	2	1	-	4
Plan to add new types	13	19	13	9	15	14	7	22	18
Plan to increase present types	10	12	9	10	10	7	15	16	5
Types to be added or increased									
Milk	8	12	9	4	6	9	10	7	8
Coffee	8	13	9	3	10	8	8	9	8
Soft drinks	6	8	5	6	4	4	11	10	-
Candy, peanuts, gum	5	6	4	1	3	3	4	11	-
Sandwiches	3	8	1	1	5	4	2	1	2
Ice cream	3	4	1	4	-	6	3	11	-
Soup	2	5	*2	2	1	4	1	5	3
Fruit juices	1	2	1	-	-	2	1	-	2
Pastry, pie, cake	1	1	1	-	2	-	-	-	2
Fruit	1	2	-	-	1	-	1	2	-
Cookies	1	1	1	2	-	2	4	2	-
Hot chocolate	1	3	1	-	1	2	1	1	2
Miscellaneous	2	4	3	-	2	3	1	1	4
Number of Plants	353	164	100	89	104	135	71	43	66

1 Percentages add to more than 100 or to more than the proportion planning changes, because of multiple answers.

2 Asterisk indicates less than .05 per cent.

SOURCE: U.S. Department of Agriculture, Marketing Service Report No. 325, July, 1959.
Survey made in 1954.

Exhibit XV, page 69 shows the kinds of machines provided in the establishments surveyed. Soft drinks represent the most popular category, being available in 70 per cent of the locations. Sandwiches are available in 12.9 per cent of locations, and meal type machines (those serving "platter type" meals) are available in only 3.9 per cent of the locations. Almost 42 per cent of the locations provided vending machines offering hot foods, hot beverages and/or sandwiches.

To the question on the responsibility for selection of products and machines (Exhibit XVI, page 70), a higher percentage of managers reported influence in product selection than in machine selection. For example, 75 per cent of the respondents said they had some responsibility for selecting the products in hot meal type vending machines, while 50 per cent claimed responsibility for machine specification. Better than 45 per cent indicated a responsibility for selecting vended soup products, while 30 per cent also indicated some influence in selecting the soup vending equipment.

The average inplant establishment had a total of 21 vending machines on location, as shown in Exhibit XVII, page 71. Meal type and sandwich machines had 1.9 and 1.6 machines on location, and were the lowest two in terms of the number of machines per establishment.

3. Summary of data from FACTORY magazine

Each year the editors of FACTORY magazine select the top ten plants in the United States, based on overall building design, facilities for manufacturing, employee facilities, and such things as

EXHIBIT XV

Kind of Vending Machines Provided by Establishments
 Surveyed by INPLANT Magazine

<u>Type of Machine</u>	<u>Per Cent of All Establishments</u>
Soft drinks	70.0
Cigarettes	68.1
Candy, peanuts, gum	64.2
Coffee	40.0
Milk	31.3
Cookies and crackers	26.8
Hot chocolate	25.2
Ice cream	22.6
Soups	19.0
Sandwiches	12.9
Pie and cake	11.9
Juices	8.7
Meal type	3.9
Miscellaneous	4.2

SOURCE: INPLANT Magazine, December 1960, p. 28

EXHIBIT XVI

Per Cent of INPLANT Magazine Readers Who Claim They
Assist in Product and Machine Selection

	Product Selection	Machine Selection
Candy, gum, peanuts	39.9	32.7
Soft drinks	50.6	36.8
Cigarettes	39.9	29.4
Coffee	50.0	33.3
Milk	48.7	30.0
Cookies and crackers	41.6	26.7
Hot chocolate	53.3	40.0
Soups	45.6	30.4
Ice cream	50.0	34.4
Pie and cake	55.1	37.9
Juices	63.6	27.3
Sandwiches	62.5	40.6
Meal type	75.0	50.0

SOURCE: INPLANT Magazine, December, 1960, p. 29.

EXHIBIT XVII

Average Number of Vending Machines Per Establishment
Surveyed by INPLANT Magazine

All vending machines	21.0
Candy, gum, peanuts	8.6
Soft drinks	6.9
Cigarettes	4.9
Coffee	4.7
Milk	4.1
Cookies and crackers	4.1
Hot chocolate	4.0
Soups	3.0
Juices	2.6
Ice cream	2.3
Pie and cake	1.9
Meal type	1.9
Sandwiches	1.6
Miscellaneous	4.6

SOURCE: INPLANT Magazine, December, 1960, p. 29.

communications and water supply.

Inplant food service provisions came in for some strong study this year, and nine of the top ten plants had some sort of established feeding program. The tenth, a factory with only 100 employees, provided a comfortable dining room where employees could eat their "brown bag" lunches.

Exhibit XVIII, page 73 shows a list of the companies and a summation of what the "top ten" offer in their inplant cafeterias.

Seven plants provide actual inplant manual cafeterias, and two use vending machines as the exclusive food service.

All the plants used contractors for their food services, but did enter into the setting of prices and the control of quality of meals.

Almost all of the managers report they are well satisfied with their vending concessionaires. Opinions of the service (given by the managers responsible for feeding) ranged from "fair" to "excellent".

Note that half hour lunch period is becoming more and more common and this may be due in part to vending machines that provide rapid feeding of large numbers of people.

4. Summary of data from personal interviews and a questionnaire sent to location-owners in Boston and Vicinity.

The total sample used in this survey was 24 establishments representing a cross-section of the industries in the Boston area. The sample was also selected to give a cross-section of localities such

EXHIBIT XVIII

Data on the Top Ten Plants as Selected by FACTORY Magazine

GENERAL	BRUNSWICK-BALKE COLLENDER	CHRYSLER	FLICK-REEDY	GV CONTROLS	IDEAL CEMENT	KENNECOTT	ROYAL MCBEE	SCREW & BOLT	SPRINGDAY	WESTERN ELECTRIC
Product	Pin Setters	Autos	Hydrau- lic Cyl- inders	Relays, Elec- tronic	Cement	Refined Copper	Port. Type- writers	Screws & Bolts	V- Belts	Tele. Sw. Gear Eqmt.
Headquarters Plant?	NO	NO	YES	YES	NO	NO	NO	YES	NO	NO
Plant Employees	450	4025	218	100	75	456	1000	540	352	1700
Office Employees	150	575	107	60	25	114	100	134	48	500
Employees Who Carry Lunch	75%	50%	10%	25%	±90%	90%	25%	25%	25%	15%
Plant Lunch Period (Minutes)	30	30	30	30	NA	20	30	30	30	30
Office Lunch Period (Minutes)	45	45	30	30	NA	45	60	30	30	45
Nearest Restaurant	CLOSE	½ MILE	1 MILE	1 MILE	5 MILES	3 MILES	1 MILE	2 MILES	3 MILES	2 MILES
CAFETERIA FACILITIES								NA — information not available		
At least one Cafeteria?	YES	YES	YES	YES	NO	NO	YES	YES	NO	YES
Operation Contracted?	YES	YES	YES	YES	—	—	YES	YES	—	YES
Plant Opinion of Service	VERY GOOD	GOOD	GOOD	GOOD	—	—	EXC.	VERY GOOD	—	GOOD
Average Time Per Service	5 MIN.	5 MIN.	2 MIN.	5 MIN.	—	—	5 MIN.	2 MIN.	—	4 MIN.
Multiple Check-out Stations?	NO	YES	NO	NO	—	—	YES	NO	—	YES
VENDING FACILITIES										
Some Income Returned for Employee Benefit?	YES	NO	YES	YES	—	NO	NO	YES	YES	YES
Hot Dishes Available?	NO	NO	NO	NO	NO	YES	NO	NO	YES	NO
Cold Dishes Available?	NO	NO	NO	NO	NO	YES	YES	NO	YES	NO
Hot Drinks Available?	YES	NO	NO	NO	NO	YES	YES	NO	YES	NO
Cold Drinks Available	YES	YES	YES	NO	NO	YES	YES	NO	YES	NO
Cigarettes Available?	YES	YES	YES	YES	NO	YES	YES	YES	YES	YES
Candy Available?	YES	YES	YES	YES	NO	YES	YES	LATER	YES	NO
SPECIAL DINING FEATURES										
Music During Meal?	NO	YES	YES	YES	NO	NO	NO	NO	NO	YES
View of Pleasant Landscape?	NO	NO	YES	YES	YES	NO	YES	YES	NO	YES
Outside Dining Patio?	NO	NO	YES	YES	NO	NO	YES	YES	NO	YES

SOURCE: "Top Plants of 1960 - Eating Facilities", FACTORY Magazine,
May, 1960, pp. 160-164.

as plants located on Route 128 and firms located in "downtown" Boston. Fifteen firms answered the questionnaire and their total employment was in excess of 75,000 employees. In addition, the writer used the same questionnaire and personally interviewed three employers with a total labor force of approximately 9,000 people. The results of the writer's survey are as follows:

Employment - The number employed at the plants responding varied from a low of 500 to over 40,000 employees. However, most of the firms reported between 1700 and 2300 employees.

Company's functions - Of the eighteen firms reporting, twelve are manufacturers, four are service organizations and two are newspaper publishers.

Company's principal products - Nine firms produce industrial products, four deal in services and intangibles and five produce consumer products.

Number of shifts - Seven firms work on a three shift basis and eleven on a one shift basis.

Number of employees on each shift - Of those firms working three shifts, 80 per cent work the first shift, 15 per cent the second shift and 5 per cent work the third shift.

Payroll fluctuations - All firms reported that they did not have seasonal peaks in their payrolls.

Type of feeding facilities - All firms reported that they had manual feeding facilities. Two firms had manual and vending facilities. Both these firms work three shifts.

Are there food or beverage machines in the plant? - Sixteen firms had food or beverage machines, two had only candy and cigarettes.

Products served in vending machines - In the plant the products sold from vending machines are frozen meals, sandwiches, soups, coffee, soft drinks, pastry, milk, ice cream, and candy. Only one reported serving full platter meals and two reported they sold sandwiches.

Number of vending machines - The number of vending machines in the firms varied from seven to "several hundred". Eleven of the firms reported they had between 20 and 30 machines, three had below 20 and four more than 30.

How are machines used? - No firm used the vending machines as the primary source of feeding.

Planning to add or decrease vending machines - Sixteen firms do not plan to add in number or capacity any of the vending machines they now have. Two reported they will add coffee and pastry machines.

Time allowed for lunch - The time allowed for lunch period varied from 30 to 60 minutes. The average time allowed for non-executive help is 45 minutes.

Who operates feeding facilities - Thirteen firms have outside caterers for their feeding operations, while five firms perform the feeding function themselves.

Availability of other feeding facilities outside of the plant - Twelve firms said that there were other feeding facilities available around the plant, but ten said that these facilities could not service the employees if the plant did not provide some feeding program.

Advantages of vending machines - The firms reported the following advantages: They are listed in order of the frequency mentioned: 1. cleanliness, 2. convenience, 3. time saving, 4. no manpower problems, 5. no subsidy, 6. some income, 7. no accounting.

Disadvantages of the vending machines - The following are the disadvantages of the vending machines. They are listed according to the number of times they were mentioned: 1. quality, 2. breakdowns, 3. change difficulties.

The last question in the survey asked if vending had a good effect, bad effect, or no effect on: employee morale, employee productivity, employee recruiting, employee health, labor management relations.

Nine firms answered this question: The results are: nine said vending machines had a good effect on employee morale; five said vending machines had a good effect on employee productivity, and four said they had no effect; eight said vending machines had no effect on employee recruiting, and one said it had a good effect; seven said vending machines had a good effect on employee health, and two reported no effect; six said vending machines had a good effect on labor relations, and two reported no effect.

C. Conclusions

After analyzing the four surveys, one comes to the following conclusions about location-owners:

1. The location-owner is utilizing vending machines more as a supplementary than as the primary means of mass feeding.

2. There is no indication that the location-owner is presently contemplating a major shift from manual to vending as the primary source of feeding. The long range trend indicates that movement is to full line feeding by vending machines, but at a slower pace than is heralded by the vending operators.

3. The location-owner is generally satisfied with the results he is getting from his vending machines, but these machines predominantly vend sundry items such as candy, cigarettes, soft drinks, gum, coffee and milk.

4. In those locations where the employees work more than one shift or the plant is spread over a wide area, the location-owner is likely to have more vending machines dispensing a greater variety of products.

Just as some vending industry executives predict that many more plants employing 300 or more workers will be turning to vended food service in the next two years, the surveys show that the vending of food and beverages has barely passed the threshold of its full development. Because of the present limitations of machine selling and the natural inclinations of customers, there will be no widespread replacement of existing public restaurants or even of employee cafeterias. Instead, vending will open up channels for sales that heretofore were lost because the human salesman had finished his eight hour day, or simply because he could not be in every spot where the consumer wanted him.

D. Contracts with Vending Operators

As the vending industry has grown, there has developed a need for legally binding contracts between operator and location-owner. There are three reasons why the operator desires a contract between himself and the location-owner.

First, a contract establishes ownership of the vending machines. This is important if location-owners become bankrupt and creditors attach the property.

Second, there should be a written agreement as to the services the operator will perform, to eliminate a later misunderstanding which could damage a good relationship between operator and location-owner. This would include such items as commissions to be paid, installations, moving of installation within the location, and duration of the agreement.

Third, and probably the most important, the operator should have some assurance that his equipment will not be replaced in a short period of time by a competitor who has bid lower at a later date. The importance of this can be illustrated by considering the operator of a vending company who has a sizeable investment in a location. If he should lose this location it would be difficult for him to absorb the equipment and personnel into the rest of his operation without incurring a substantial loss.

There is no doubt that present contracts are in some instances vague and at the same time unenforceable from the operators'

standpoint, and it is a moot question as to the value of the operator suing a location-owner to hold to the contract.

A sample of a contract used in a proposal for a large mass feeding installation is shown in Appendix D, page .

The basic contract usually contains the following provisions:

1. Provision for installation
 - a. Who will do it
 - b. Who will supply materials
2. Provision for servicing and maintenance
3. Agreement on commission rates
 - a. The basis for payment
 - b. When they will be paid
 - c. How they can change
4. Ownership of venders
5. Cancellation notice
6. Duration of agreement

Of the operators interviewed, 100 per cent stated that they had contracts with some of their location-owners. A few indicated that they will not use contracts in their future negotiations as they felt the contract did not serve any purpose. These operators primarily had small vending installations where the amount of equipment used on the location could easily be absorbed by their operations. The operators with large installations believed that contracts are necessary in order to control commission rates and to prevent the location-owner from switching rapidly from one operator to another. The contract

shown in Appendix D, page 144 , paragraph 14, stipulates the duration of the agreement will be three years, as the operator felt this would be the length of time he would need to insure continuity of his overall operations. In contrast, the operator who has just one or two machines in a location normally required only thirty to sixty days' notice from the location-owner for termination.

The contract, if written well, can serve a useful purpose not only from a legal standpoint, but also as a financial aid. The lending institutions are more prone to finance the purchase of equipment for a location if there is some assurance as to how long the equipment will be kept on location.

VI. SUPPLIERS

The principal suppliers to the vending operators are manufacturers or wholesalers of:

1. Cigarettes and cigars
2. Carbonated beverages in cups and bottles
3. Coffee
4. Milk
5. Confectionary goods - candy, nuts, gum, crackers
6. Hot canned food
7. Equipment and parts (see chapter on machine manufacturers)

Other items, such as doughnuts, pies, pastries and sandwiches, are supplied by small local bakeries or caterers, and in some instances the operator manufactures these items himself (see section on commissaries).

The suppliers of the above items, 1-7, include many of the leading manufacturers in the country who have come to realize the potential of selling their products through vending machines. Some manufacturers, such as the cigarette, cold beverage, coffee and candy people, are already selling sizeable portions of their total sales through vending machines, while the manufacturers of hot soups and full course meals (T. V. dinners) are just beginning to recognize vending as a "promising new market".

"In 1956, Continental Can Co. pointed out, the first full year that hot vended canned foods were available in automatic vending operations, 6800 machines sold 30 million

hot meals in cans; in 1958 only two years later 17,100 machines sold 75 million hot meals in cans, a value of about \$18.5 millions.

From the canners' viewpoint, Continental said, the market for hot vended canned foods is of particular interest, as it does not compete with existing channels, and hence presents possibilities for expansions in a previously unexplored area. (29)

A. How Important is Vending as an Outlet for Suppliers' Products?

"In a study of automatic vending machines, the Alexander Hamilton Institute reports that last year these machines dispensed 15 out of every 100 packs of cigarettes, 2 out of every 10 candy bars, and 25% of all soft drinks. They also served up to two billion cups of coffee." (30)

These facts plus the study by Continental Can Company substantiate that vending has become an important channel of distribution. Because of the new found importance of vending machines, many of the national and local suppliers now have departments headed by a "vending specialist", whose primary job is to insure that his company's products gain a segment of the market served by vending machines: for example, General Foods (31), New England Confectionary Co. (32), H. P. Hoods Milk Co. (33), H. J. Heinz Co. (34).

1. Cigarettes - The cigarette sales through vending machines in 1960 were \$1,000,000,000, or almost 44% of the total sales volume of the automatic vending industry. This amount accounted for 14.9% of all cigarettes sold in the United States (35). This figure has shown a steady growth over the years and it is expected that the percentage of cigarettes sold through vending machines will increase as the vending industry expands its operations, as shown in Exhibit II, page 5.

2. Carbonated beverages in cups and bottles - The vending of soft drinks is a business built solidly on nationally advertised brand names, such as Coca Cola, Pepsi Cola and Canada Dry. Exhibit II, page 5 reflects the steady growth of soft drinks in the years 1957-1959.

3. Coffee - In a study made by the Pan American Coffee Bureau and reported by VEND Magazine, it was revealed that 390 million cups of coffee are consumed each day (36). Where is all this coffee consumed? The home is still way out in front, but in the last ten years the amount of coffee consumed on the job has more than doubled.

Exhibit XIX, page 84 shows the vending machine is the most popular method of obtaining coffee, with outside restaurants and company cafeterias second and third respectively. When you consider that the projected employment for 1970 at 87 million, up from the 70 million of 1960, it means that vending machines will be an even more important outlet for coffee than they are at the present time.

4. Milk - The total volume of milk sold in vending machines increased sharply during 1960, after a setback traceable to the industrial recession of 1958 (Exhibit II, page 5). Another contributing factor was that there were more machines in use due to "the expansion of vended service in industrial and institutional facilities." (37).

5. Confectionery goods - In 1959 VEND Magazine conducted a survey of 63 candy bar makers and asked the question, "What are the top five volume outlets for your candy bars?" (38). The results are shown in Exhibit XX, page 85. It is evident that vending machines are an important outlet for candy manufacturers.

EXHIBIT XIX

How the Worker Obtains Coffee on the Job

	<u>Factory</u>	<u>Office</u>	<u>Store</u>	<u>Outside and Other</u>
Vending machines	26%	10%	2%	11%
Sent in from restaurant	22%	28%	38%	37%
Coffee cart	2%	3%	*	*
Go to company cafeteria	16%	17%	13%	10%
Cart from cafeteria	4%	3%	*	*
Truck	3%	3%	2%	2%
Made by employees	15%	31%	33%	24%
Brought from home	12%	5%	12%	16%

* Not applicable

SOURCE: VEND Magazine, September 1959, page 107

EXHIBIT XX

Ranking of Candy Bar Outlets from a Study by VEND Magazine

The numerals below each type of outlet indicate the number of candy manufacturers who placed this type of outlet in the rank shown.

<u>No. 1</u>	<u>No. 2</u>	<u>No. 3</u>	<u>No. 4</u>	<u>No. 5</u>
Wholesale Candy, Tobacco Jobbers*	Supermarkets	Vending Firms	Supermarkets	Vending Firms
15	10	10	4	3
Supermarkets	Wholesale Candy, Jobbers	Supermarkets	Vending Firms	Drugstores
9	6	4	2	3
Vending Firms	Vending Firms	Drugstores	Drugstores	Theaters
3	5	3	2	2
Drugstores	Drugstores	Theaters	Variety Stores	Restaurants
1	3	2	2	1

* Includes vending companies which are also wholesalers and jobbers.

SOURCE: "How's the Candy Business" VEND Magazine, September 1959,
pp. 60-61.

6. Hot canned foods - Hot canned foods have a firmly established place in the food vending business. Soups constitute 60 per cent of the canned foods sold in 1959 while the remaining 40 per cent is for other canned foods - Exhibit XXI, page 87. The figures in Exhibit XXI represent only part of the growing automatic feeding business, since these data do not include the sales of sandwiches (hot and cold), food sold in hot and cold all purpose machines, or the hot platter machines now in use. Statistics are not available as to the dollar volume of these items excluded from Exhibit XXI.

With the vending industry's optimists anticipating sales of 4 billion by 1965 (39), suppliers can look to automatic vending as an important method of distributing their goods.

B. How do Suppliers Promote Their Vended Products?

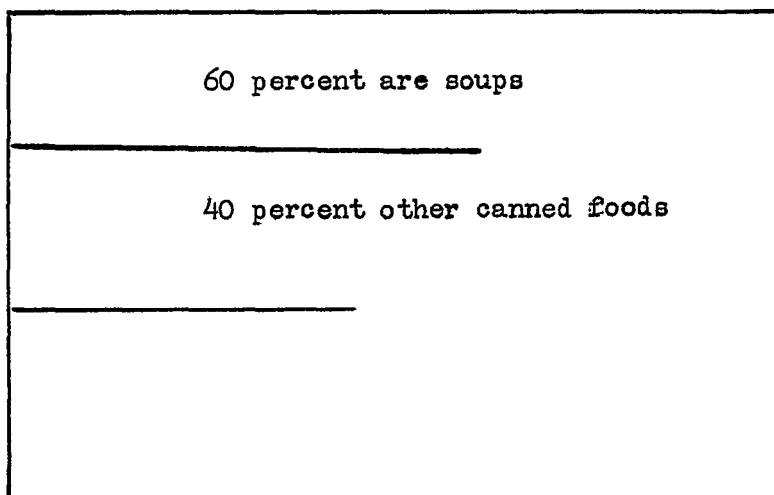
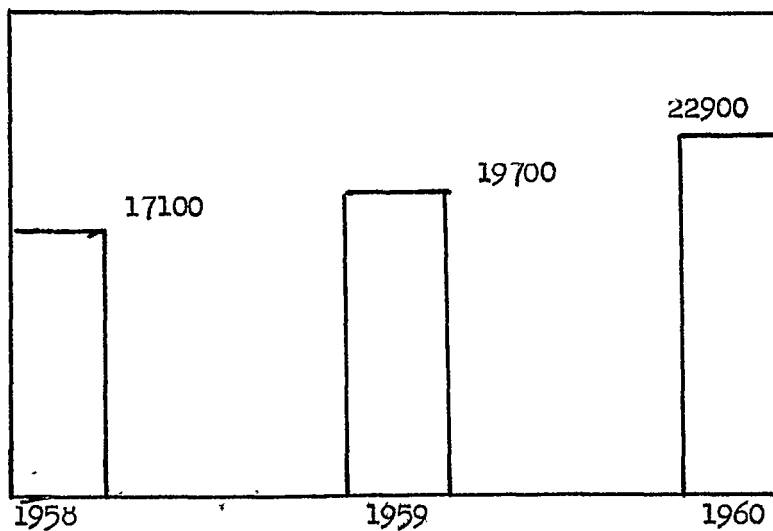
In 1959 VEND Magazine asked some 63 candy bar makers "What plans they had, if any, to include some mention of vending machines in their consumer advertising and promotion?" (40) The results showed that 16 per cent of the companies said they now mention, or plan to mention, vending in consumer advertising, 25 per cent do not plan to mention vending, and 44 per cent are undecided.

At the present time the candy manufacturers are not mentioning vending in their advertising nor are they planning to do so.

The author determined from interviews with vending operators that the name brand manufacturers do not conduct special promotions for their products that are sold in vending machines, but rely on their national and local advertising campaigns to develop and maintain

EXHIBIT XXI

Hot Canned Foods - Volume by Type

NUMBER OF MACHINES
(000)

SOURCE: VEND Magazine, Market Data, March 15, 1961, page 30.

a consumer following. The operators, in turn, often buy name brands easily recognizable by the consumer. In hot canned food vending, the biggest supplier at present is H. J. Heinz Company (41), a firm that conducts continuous large scale advertising programs promoting their full line of food products. The vending operator is more inclined to use the Heinz product line, since it already enjoys considerable consumer acceptance.

The soft drink manufacturers, such as Coca Cola, Pepsi Cola and Canada Dry, have always spent millions of dollars in sales promotions, and this fact has undoubtedly aided the sales of soft drinks. Large scale sales promotions can also be attributed to the coffee, candy, milk and cigarette industries.

It is the writer's opinion that vending operators should continue to use only nationally branded items or those items with strong local consumer acceptance. The argument for using nationally branded food items is that they are heavily advertised on television, radio and in magazines and newspapers. The public is aware of the brands and the quality attached to them.

The importance of the supplier cannot be underestimated as he performs many useful functions for the mass feeding industry, such as sales promotion, improvement of the product, improved packaging, and some minor financing. The latter two functions are discussed in other sections of this thesis.

C. Packaging

One factor that can contribute to the growth of mass feeding is the development of better packages in which to hold food items for a sustained period of time of anywhere from seven to thirty days. The vending of pre-packaged foods and beverages is a challenge to the packaging expert and food technologist, who must keep pace with the evolution of vending equipment that is being designed to bring stored foods almost instantly to a steaming hot and tasty condition and serve them very quickly, just by the push of a button.

In the early days of food dispensing, the operator encountered many types of packaging problems which oftentimes created illness, ill feeling and general aggravation to both himself and the consumer.

In a survey made by the MODERN PACKAGING Magazine of 86 food processing firms, it revealed that the two major objectives in package planning and selection are, in this order: consumer acceptance and protection (42). For the operator, the first comes from utilizing name brands, and the second by insuring that the food to be dispensed is packaged correctly for use in vending machines.

Although the operator does not in many cases have control of the packaging of food products, a discussion of some of the more apparent problems encountered is appropriate.

Hot meals - At the present time there are few machines in use dispensing complete hot meals, because the operators have found that the quality of food dispensed is not good. The packaging of

frozen foods that are heated and dispensed by a vending machine is still being tested. The meal has to be pre-packaged, in a refrigerated, dehydrated, or some specialized state. One such method is being tested now by Sir Edmund Hilary, who is again climbing Mount Everest in the Himalayas (43). The Brass Rail, a New York food firm, announced in January, 1962 that they were packaging some 60 pre-cooked, frozen, complete meals in their own commissaries in pressure formed, high-density polyethylene trays, sealed over the top with printed polyethylene coated cellophane (44). These meals are dispensed through specially designed vending machines but cannot be kept beyond a period of several hours before the food begins to lose its quality, dehydrate and change color.

It is in the packaging and vending of hot meals that the mass feeder is waiting for a major positive development.

Sandwiches - The correct packaging of sandwiches is a subject of growing concern to the vending operator because of his increased interest in owning his own commissary (See section on commissaries).

It is necessary that sandwiches be wrapped in cellophane or waxed paper to preserve their freshness. Sandwiches also have a tendency to become soggy as the filling material soaks into the bread. Some sort of a film should be placed on the inside of each piece of bread, and butter has been found to be quite effective.

Different types of wrapping materials and bags for vended sandwiches are available in plastic, glassine, wet-waxed paper and foil. Venders should use only those which permit ease of sealing and

moisture resistance.

Hot canned meals - The major problem in the packaging of hot canned meals from the operator's point of view is to develop longer product life for foods kept under constant heat of temperatures up to 150° F. The customer has the problem of eating the contents right from the can which is too hot to handle, or using an additional container for eating. The first alternative is being solved by special labels that will hold the heat in the can and allow the consumer to hold and eat the contents. The second alternative creates the problem of additional cost and a lack of storage space for the extra container.

Pies and pastry - Pies and pastry have to be vended through special type machines or the dispensing operation may tend to crush and make the product unpalatable. The most common type of vending machine that is used to dispense pies and pastry allows the consumer to reach in and withdraw the product after the appropriate amount of change is deposited. The machine is normally made up of individual compartments. An example is shown in Exhibit V, page 20. Most often pies and pastry are dispensed in plastic containers, and recently Hovag Industries of Wilmington, Delaware, formed a new division to manufacture plastic containers that will withstand temperatures in a wider range - from 60° to 450° F (45).

Conclusions - There is some case for special consideration of packaging and presentation requirements for almost every item intended for sale from a vending machine, because in almost every case

there is room for some little added touch which will make all the difference to consumer reaction. By and large, whether it is a "planned" or an "impulse" sale, people go to a vending machine because it is convenient to them, and for this reason the packaging and presentation must always be planned with an eye on convenience. However, the convenience feature cannot be overdone at the expense of good sanitation procedures.

In general, items packaged for automatic vending machines should include some or all of the following characteristics.

1. Easy to open without unnecessary teasing.
2. Designed so food will not fall out easily when the package is opened.
3. Able to hold portions not eaten immediately by the consumer.
4. Designed to allow the user the opportunity to eat the food without touching it with his hands.
5. Designed to attract the attention of the consumer.
6. Priced in a clearly visible manner.

The sizing, handling and display of vended goods, as well as the perishability of vended food products, will make increasing demands on the companies that create the packages for the robot salesman of the future.

This will, of course, call for continuing research on the part of packaging companies, but no one doubts that the problems will

eventually be solved, just as paper-cup manufacturers solved the problem of creating practical cups for hot beverages. The success of the Lily-Tulip Cup Corporation and Dixie Cup Company in producing an insulated cup (one that did not add its own "paper" flavor to the beverage) had much to do with increasing the popularity of vended coffee, and it created a huge new market for them. An estimated 1,860,000,000 cups were sold by suppliers to vending machine companies.

VII. PROBLEMS OF THE MASS FEEDING INDUSTRY

The vending industry has grown rapidly in total sales in the past decade, as can be seen by Exhibit II, page 5. This growth has not come easy and many a vending operator has been forced to cope with situations entirely new to him.

While the vending industry is a comparatively new type of retail distribution, the concept of mass feeding through vending machines is even younger and is on the doorstep of tremendous growth. Whether mass feeding obtains the full potential available depends on how well the operator solves the problems that are presently plaguing him.

The main problems are: How is the expansion of the industry to take place and by what means will it be accomplished? Can the operator continue to pay the present rates of commissions without having his operation become unprofitable? Does the present management have the scope and background to analyze and solve the problems of industry? Will the question of health standards create a problem as the vending operator ventures deeper into mass feeding? Can the operator keep his business profitable in the face of the growing trend to tax not only machines but to place a sales tax on his business? What type of industry statistics are currently provided and what type might be provided? Each of these problems is discussed in the following sections.

A. Expansion

The expansion of the individual operating firms has taken

place by four means.

1. Retained earnings and short term borrowing (up to 48 months)
 2. Vending machine manufacturers
 3. Acquisitions and mergers
 4. Bond and stock offerings
1. Retained earnings and short term borrowing (up to 48 months)

The need for adequate low cost financing for new equipment has become of paramount necessity because of the opportunity for the operator to place banks of modern vending equipment in large consumer locations that offer a profitable sales volume. Many mass feeding locations require a minimum of \$8,000 (author's estimate) of equipment to give the consumer a reasonable selection of food items and to receive the maximum of the potential sales transactions. Some of the larger installations require enormous outlays for equipment. One such establishment is the Boston Naval Shipyard which requires in excess of \$200,000 worth of equipment to serve the installation adequately (46). Where does the vending operator obtain this type of capital financing?

Retained earnings are a source for capital financing but this source does not offer to the operator the dollar volume that is necessary to keep pace with the rate of expansion that mass feeding is

undergoing. It is shown in Exhibit XXIV, page 107 that the operator is working on a very small margin which is not large enough to warrant expansion totally from retained earnings. The smaller operators (sales under \$500,000) have to go to sources outside the company, such as banks or the manufacturer of vending equipment in order to obtain adequate short term capital to meet the financial demands of establishing a number of mass feeding establishments each year.

The author personally interviewed the officers of several banks in Boston who are familiar with the financing of vending equipment (47). In answer to the question, "what criteria would you use in establishing a loan for a vending firm?", the banks stated:

Character of operators

Past experience

Management

Current balance sheet

Earnings over the last five years

Collateral

Length of loan

Contract with the location

These criteria are placed in the order of their importance but the banks indicated that many of these criteria might be considered simultaneously or in a different order, dependent on the financial data presented to the bank. The maximum length of time that any of the banks would usually extend an installment loan would be thirty-six

months, but special arrangements might be made (if many of the above factors were very favorable) for longer term loans.

Interest rates ranged from 5% to 6% per annum, with the principal being reduced by monthly installment payments. The real rate of interest, because of the installment payments, ranged from 9 to 11 per cent. The banks stated that they would want a lien (chattel mortgage) on all equipment bought, plus a lien on equipment owned outright by the borrower, since the equipment would drop in value more rapidly than the loan could be amortized.

The small operator who has been able to get by on a small amount of borrowed funds faces a problem in attempting to obtain a sizeable amount of money for a large capital investment. When compared to the larger, more flexible company, a small operator is a tremendous risk to the bank since the loss of one big account can create a burden of high fixed charges without offsetting sales volume. The larger operator can recover very quickly from the loss of a location and occasionally the additional machines that are made available can be used more profitably elsewhere.

Banks offer the operator the chance to expand and grow with a growing industry. It is necessary for the operators to collect and present enough statistics of their operations so that the banker can be in a position to realize the growth potential of the industry and feel justified in aiding individual operators in obtaining the necessary funds that nourish growth.

2. Vending machine manufacturers

The vending machine manufacturers perform an important function for the purchaser of equipment by offering suitable financing arrangements. Without this type of financing many of the operators would not have been able to get started or to expand to any great degree.

The manufacturer offers terms ranging from 10 to 33 1/3 per cent of the purchase price as a down payment and from 12 to 36 months to amortize the loan in monthly installments at 5 to 6 per cent simple interest (48). This loan is usually discounted by the manufacturer with banks.

The operator is caught between the suppliers who are developing and refining more products to be used in vending machines and the manufacturer who is developing newer machines to vend these goods. The growing obsolescence of many types of vending machines creates an almost insurmountable financial burden to the operator. Obsolescence in machine design and functions will accelerate at a faster rate as the research and development programs of the manufacturers increase in magnitude.

In the future, the manufacturer will have to consider aiding the operator in a more vigorous manner than he has in the past. In some instances the manufacturer has already realized his responsibilities and one operation in Boston said he was receiving very favorable financing from a national manufacturer.

General Foods has announced a financing program for operators

for the purchase of new hot beverage venders (49). The manufacturers participating are: Avenco, Apco, Bally Vending, Cole Products, Continental Vending and Schroeder Industries. Under the plan, the operator applies to any of the six participating manufacturers for a loan. Credit clearance is made by both the equipment manufacturer and the Chemical Bank New York Trust Company, the financing institution. Following credit approval, equipment is supplied to the vending operator.

The plan requires a 10 per cent down payment and repayment in thirty-six monthly installments, at 6 per cent simple interest. All equipment shipped under the program will bear a panel signifying that the machine serves Maxwell House coffee, a General Foods product. General Foods indicated that the plan is being used by a number of operators. Exact statistics are not available.

Some manufacturers have leasing available to the operators that extends for three to five years. Often this is handled by a subsidiary company set up for the particular purpose. The terms are based on the cost of equipment with the leasing firm usually covering fire, theft and insurance. Some of the leasing systems do not require a down payment, so the operator does not concern himself about depreciation, as he can write off all lease costs and affect a tax saving. This is a help when an operator needs working capital for expansion either in present or new locations. Other companies require a down payment of one month's rental plus the first regular monthly payment.

For the operator who is just starting out and has a limited amount of capital, it may be better for him to lease equipment on a short term basis to avoid heavy capital expenditures. As the operator becomes more financially stable and the operator develops experience, there is a better chance that the operator will select more suitable equipment for his business. This method avoids experimenting with costly purchases of expensive equipment that could impede the growth of the vending firm. The larger, more experienced operator, whose business is solicited more vigorously by the machine manufacturers, is able to obtain equipment on a trial basis, as future orders will more than offset the cost of the trial period and the equipment involved.

3. Acquisitions and mergers

Acquisitions and mergers, both horizontally and vertically, continue to be a prime avenue of expansion. Mr. G. R. Schreiber in the April 1, 1961 issue of VEND Magazine stated that:

"Top executives in the big operating companies seem to be competing with each other now as much for new acquisitions as new accounts."

The tempo of the merger and acquisition activity in the vending industry can be illustrated by the following: In the period from March 1959 to August 30, 1961, The Automatic Retailers of America (incorporated February 1959) acquired 36 separate operating companies. In the same period the Interstate Vending Company (incorporated June 1955) and United Servomation (incorporated October 1960) acquired 18 and 11 operating companies respectively (50). Two of the acquisitions

made by Automatic Retailers of America in the Greater Boston Area were Allied Vending Engineers and Automatic Food Services. In May of 1961 the American International Bowling Corporation of Englewood, New Jersey acquired the following companies in the Greater Boston Area:

Melo-Tone Vending Company, Inc.

General Automatic Vendors

Clover Leaf Caterers, Inc.

Coffee Break of Massachusetts, Inc.

City Cigarette Services, Inc.

City Cigarette Sales, Inc.

Capitol Vending, Inc.

Capitol Music Company

These acquisitions significantly reduced the number of vending companies in the Greater Boston Area (See Chapter IV).

Why are vending operators merging with or acquiring other vending companies?

Among the major reasons for all the merger activity were the changing characteristics of the vending industry and the desire of successful operators to diversify or protect their investment. The vending business was growing rapidly but the cost of equipment was increasing, and it became difficult to adequately finance growth. An operator was reluctant to expand a business if a major share of the revenue was derived from a few large customers or from a relatively small geographical area, because of the risk involved. However, by

becoming associated with a large, diversified operation, the risk to the vending operators could be minimized. There were additional incentives to pool resources such as an improved ability to raise needed capital for growth, the employment of better management techniques for operating efficiencies and the necessity to train personnel and provide management depth for future continuity of operation.

In the last year the operating companies have been acquiring food-preparation and catering companies. Automatic Canteen acquired Nationwide Food Service (Sales - 25 million); Automatic Retailers of America acquired the Slater System (Sales - 70 million); and Interstate Vending Company acquired the Brass Rail (No sales figures available). The food preparation and catering companies utilize manual feeding to service the manufacturing plants, colleges and hospitals. Essentially, manual feeding is the establishment of a cafeteria-type service on the premises of the location-owner, and to some extent is a competitor of the automatic food vendor. Acquisitions of the manual feeders has strengthened the position of the automatic food vendors as prepared food merchandisers and at the same time have provided additional locations for traditional vending machines.

Despite all the merger activity in the vending industry, this is still an industry of small companies with approximately 89 per cent of the vending operators employing less than 11 people, as shown in Exhibit VII, page 38.

What about future merger activity? Mr. Aaron Goldman of the

G. B. Mache Corporation, Washington, D. C. (Sales - 25 million) stated:

"We think that merger and acquisition activity will subside in 1962. This will probably be a good thing for the larger companies which have been doing most of the merging and acquiring. Operational savings and economies which were supposed to accrue from such corporate consolidations will begin to appear when top management begins to pay attention again to the "bread and butter" aspects of vending" (51).

I assume Mr. Goldman means better service and a better quality product when he speaks of the "bread and butter" aspects of vending.

4. Bonds and stock

The two most popular methods of financing expansion internally and through acquisitions have been the sale of bonds and the issuing of common stock.

In the period 1959-1961, nine new vending companies were listed on the Over-the-Counter market, while in the 13 year period from 1946 to 1959 only two companies had their stocks listed on one of the exchanges. Of the nine new vending companies, four have operating branches located in the Greater Boston Area: American International Bowling Corporation, Automatic Retailers of America, Interstate Vending Corporation, and United Servomation, Inc.

The investing public has discounted the projected earnings of the vending companies and the vending stocks are selling at extremely high price/earnings ratios. Exhibit XXII, page 104 shows the price earnings ratios of the largest vending companies for 1960. The larger vending companies used the inflated value of their listed stocks to consummate acquisitions of the smaller companies.

EXHIBIT XXII

Price Earnings Ratios for the Six Largest Vending Companies

Company	1960 Earnings	Mean Price/Earnings Ratio	1961 E Earnings	Mean Price/Earnings Ratio E ..
Automatic Retailers	.54	37.1	.85	60
A.B.C. Vending	1.01	16.3	1.05	22.5
Interstate Vending	.64	31.3	.82 A	40.2
Mache Corp.	.47	47.0	.55	53.7
United Servomation	N.A.	N.A.	.61 A	37.8
Automatic Canteen	.77	48.0	.60 (x)	61.0

A - Actual

E - Estimated

(x)- excluding non recurring profits

SOURCE: Standard and Poors, Moody's Industrials

The recent merger and acquisition activity and the constant additions of newer, more expensive machines has strained the finances of the vending companies. The companies have now turned to the institutional investors, such as insurance companies, to provide long-term capital. The most common type of offering being made to institutional investors are convertible debentures. This type of offering offers a "hedge" type of investment for investors who are unable to directly purchase the common stock because of a lack of an adequate investment rating. Financing through the sale of convertible debentures is confined to the very largest companies in the vending industry and only to those who can show growth in both earnings and sales. Data on long term debt financing is not readily available, as much of this type of financing is handled as a private placement.

It is possible that the probable slow-down in the acquisition pace could minimize financial requirements for the larger operating companies. Public financing by newly formed combinations of smaller operators and manufacturers, or by rapidly growing smaller companies, promises, in the coming years, to expand the supply of vending equities, which though growing rapidly, is still small. Furthermore, with rather rapid depreciation and amortization rates, cash flow for some of the major operating companies is often twice as much as reported earnings.

B. Commissions

"Commissions paid to the outlets in which vending machines are installed represent the second largest cost item on the average operating company's balance sheet. The cost

of commissions is exceeded in most operations only by the cost of merchandise sold through machines." (52)

This fact, as stated by Mr. G. R. Schreiber, Editor of VEND Magazine, makes it understandable why the commission payment is one of the vending industry's main concerns.

How much does the operator pay in commissions? The Annual Operating Ratio Report, prepared by Price, Waterhouse and Company for the National Automatic Merchandising Association, revealed the following five-year trend in commissions as a percentage of gross sales.

EXHIBIT XXIII

Commissions - Percentage of Gross Sales 1955-1960

		No. of Firms Reporting
1955	9.24%	91
1956	9.21	128
1957	9.07	163
1958	8.83	183
1959	8.48	212
1960	8.51	184

SOURCE: Annual Operating Ratio Report by Price, Waterhouse and Company for National Automatic Merchandising Association, as shown in VEND Magazine, January 1961, p. 51.

No distinction is made for the different commission rates paid on each type product, but the figures are based on the aggregate commissions reported paid on all products vended.

It is interesting to note that in 1958 the same report showed that average net profit before income taxes for the same reporting companies to be as follows:

EXHIBIT XXIV

Net Profit Before Federal Income Taxes as a Percentage of Gross Sales 1955-1960

		No. of Firms Reporting
1955	3.43%	91
1956	3.25	128
1957	3.33	163
1958	2.86	183
1959	4.33	212
1960	4.58	184

SOURCE: Annual Operating Ratio Report by Price, Waterhouse and Company for National Automatic Merchandising Association, as shown in VEND Magazine, January 1961, p. 51.

In 1958 the operator was paying in commission rates three times what he was earning before federal income tax.

What prompts the operator to pay such high commission rates? Initially the commissions were paid to introduce the vending service and in many instances to aid a new operator gain a foothold in the industry. Some of the national firms have gained accounts in new territories by offering abnormally high commissions. One operator in Boston described the reason for commission payments in the following manner:

Occasionally an operator is in a distressed position when he has lost a location and has idle equipment on his hands. He is faced with the problem of fixed charges on equipment that is not contributing revenue, and the fastest way to place the machines is to offer a high commission. Soon the operator finds that the high commission he is paying means he has to skimp on the service he renders in order to make the location profitable. The location owner objects, changes operators, and the cycle starts again.

What type of commissions does the operator pay? The commission can be paid either on a cash basis or as an offering of a particular service. In the case of the cash payment this is often determined in the following manner:

1. Fixed percentage of total sales.
2. Sliding scale percentage of total sales.
3. Different fixed percentage of sales for each type of product.
4. Sliding scale percentage of sales for each type of product.

In the case of the non-cash commissions the operator generally provides an attendant who is present on the location during the busiest hours. The attendant insures that the machines are full, in proper working order, makes change and performs the various house-keeping functions so necessary to keep the location in a neat condition.

How much does the operator pay in commissions? None of the operators interviewed would reveal their commission schedules for competitive reasons. However, the operators did reveal that they generally pay commissions on coffee, soft drinks but are reluctant to do so on sandwiches, hot foods and pastry, the latter being low margin items.

Many operators do not have any idea of what they can afford to pay for a particular location, and their commissions are determined without any knowledge of the amount of profit they can expect from a location. With an average net profit of 4.58 per cent of gross sales before federal income taxes, the operators do not have too much margin for error when computing the amount of commission to be paid.

There are three considerations that an operator must keep in mind when determining the amount of commissions he is going to pay. The first is to know his operating cost-profit picture for each location and if possible for the products vended in the location. The larger concerns are capable of handling this problem as they have the personnel available. The smaller operator cannot physically perform all the functions he finds necessary, and often his determination of

costs and break-even points are very rough guesses.

The second consideration is the capital requirement of the business. If the operator drains profits away from his business in the form of commissions to location owners, he is diminishing his chances for expansion because eventually he will not have enough capital available for the replacement of old equipment or purchase of new equipment for new locations. The growth of mass feeding has forced a more realistic appraisal of commission rates and commission practices. It is not unusual for a vending company to have \$25,000 or more invested in vending machines in one location. With investments of this magnitude, vending management will have to analyze commission rates carefully if they want to realize any net profit.

The third requirement is that the operator choose his locations very carefully. It is obvious that not all locations are profitable, and this fact alone should convince operators to do as much research as possible before placing any machines. The writer visited a small electronics factory employing approximately ninety people, where one operator removed a coffee and a pastry machine because the location was not profitable. As soon as the first operator removed his machines, a second operator installed a battery of machines with a higher break-even point. The second operator obviously is using guess work on the selection of his location.

The demands in the mass feeding field for quality of service, product and machine are greater than in any other phase of vending.

These demands coupled with the large investment in equipment leave little room for the operator to pay commissions for mass feeding locations.

If the operator is not careful as to the amount of commission he pays, he will be in essence sponsoring a self liquidation program. .

In summary, it can be said:

1. That the average operator is paying out in commission rates almost 2 to 3 times what he is earning in profits before federal income taxes, as shown in Exhibit XXIII and Exhibit XXIV.
2. Operators should develop cost and break-even charts for their operations, analyze their capital requirements for the future, and finally use great care in selecting locations and the commissions they pay. .
3. In mass feeding the quality of service, product, good.. housekeeping and general interest in keeping equipment up to date will do more to retaining an account than offering a large commission.
4. That the sliding scale commission structure is more desirable than the flat rate for the following reasons:
 - a. As the volume of sales increases on individual machines, the cost of depreciation to sales decreases or costs in relation to sales decline as sales increase.

- b. A firm after offering a flat commission payment based on an installation of a fixed number of machines may be asked to increase the number of machines to help out at peak periods. The operating costs increase but the commission rate stays the same.
- c. An operator may bid for a certain location based on the fact that there are 10,000 employees. Subsequent layoffs reduce the plant size to 5,000 employees. The operator is still paying the same flat commission rate but now it is for a reduced volume.

C. Management

"Service of which all can be proud can only be performed by properly trained and dedicated people who are supported by thoughtful planning." (53)

In an era when vending machines have become more automatic, the success or failure of the machines and the company that owns them, depends on the skill of the operating management.

As the industry has grown, the problems of management have become more complex. The days of the one-man company are limited if he is at all interested in mass feeding. With the advent of mass feeding has come the need for a larger company that has good financial backing, a competitive sales force, a service department that can keep machines filled and in working order, and finally a group of professional managers to plan the direction of the company effectively.

Where are the operators going to obtain the proper personnel? The first source is its present group of employees. The smaller company is limited in this respect, because it does not have a large group to select from and does not have the resources to spend the time and money training personnel in new jobs. The larger companies usually can promote from within more easily because more potential management people are available along with the resources and facilities to train them.

A second source for personnel is for the operator to "pirate" them from competitors or from other industries. The "pirating" of experienced personnel is far cheaper than attempting to train an inexperienced person who as yet has not proven his capabilities.

A third source of obtaining the necessary personnel is the merger or acquisition of competitor companies. This method often provides an excess of personnel and there usually is a consolidation and elimination of personnel after a merger or acquisition.

William S. Fishman of the N.A.M.A. stated that:

"Thousands of small individual businessmen cannot afford the expert professional help nor the field personnel to really compete with a hard-hitting national sales organization or cannot hope to match the abilities of larger companies to attract, train and promote key personnel. Larger firms can afford the type of professional personnel managers trained to hire and manage employees." (54)

After the recent mergers and acquisitions, the operating firms in the Greater Boston Area, who are active in the mass feeding field, are branches of the larger national firms. Thus, the management problem has

been greatly reduced as the resources and the personnel can be shifted from area to area as the situation warrants. The smaller operator copes with each new situation with a minimum number of trained people and a limited amount of capital.

It is not unusual to find the smaller operators working 12-15 hours a day, six days a week, in order to meet the needs of their customers.

As costs rise and cut into profits, as the industry becomes more complex and requires more of management, the difference between a profit and a loss in an operating company will be sound management administration.

D. Health

In recent years, the dispensing of food and beverages through coin-operated vending machines has undergone phenomenal growth. The variety of products dispensed through such machines has expanded to include many items of a readily perishable nature. The sale of perishable food and beverages to the public by this means has introduced new problems in food protection not normally encountered in conventional food service operations.

In 1956 many of the states, local health authorities and the vending industry requested the U. S. Public Health Service to undertake the development of a suggested ordinance and code for the guidance of those authorities concerned with the sanitary control of vending machine operations. The result was that in 1957 the U. S. Department of Health,

Education and Welfare issued a pamphlet as a guide for local health authorities in planning their food sanitation programs as regards vending machines and the commissaries that prepare food for vending machines (55). This suggested ordinance and code has been endorsed by the National Automatic Merchandising Association.

The author conducted a survey of the Health Departments in Boston and Vicinity for the purpose of evaluating their awareness of health problems as they pertain to vending machines. Information was received through answers to the Questionnaire for Health Departments, as shown in Exhibit XXV, page 119 (Questionnaire Appendix C, page 143)

1. Summary of data from questionnaire for health departments

Thirty five health departments from a total sample of forty answered the questionnaire. The sample was selected from the cities and towns that constitute Boston and Vicinity, as described in Chapter I, Section E.

Do you have any health regulations regarding vending machines embodied in your local sanitation rules?

35 replies Yes 14.7% No 85.3%

If the answer to Question 1 is NO, does your health department have any intention of adopting health regulations that pertain to vending machines?

32 replies Yes 40.6% No 43.7%

Waiting for State regulations 15.7%

Do you make any inspection of present vending installations that are located in your city?

34 replies Yes 57.6% No 42.4%

Are you familiar with the booklet "The Vending of Foods and Beverages, A Sanitation Ordinance and Code" as published by the Public Health Service in 1957?

35 replies Yes 61.8% No 38.2%

The fifth question asked for general comments about health regulations that pertain to vending machines. Of the thirty five replies to the questionnaire, sixteen health departments made comments which were varied and interesting. Some of the more important comments are as follows:

If the trend of adding more variety of foods into the machines continued, then, I believe the need of specific regulations will be necessary.

Every city and town should have health regulations that pertain to vending machines.

I do not care too much for them (vending machines) - those that dispense liquids cannot be sanitized as well as those that serve in a regular restaurant.

Probability that food vended in machines located in our town is prepared elsewhere makes any local inspection a partial job.

I think such regulations should be passed by the State Health Department and be uniform for all cities and towns.

2. Conclusions resulting from answers to the questionnaire

After analyzing the answers to the questionnaire, one comes to the following conclusions:

- a. At the present time health regulations for vending machines are lacking, for effective sanitation control of present equipment.
- b. That the present inspection of machines is done on a limited basis.
- c. That the health authorities recognize the need for more careful inspection procedures.
- d. That if regulations are to be adopted, they should be uniform for all the cities and towns.

What is being done now? The Massachusetts Department of Public Health is presently drafting a Sanitation Code for vending machines, to be used as a guide by the cities and towns in the Commonwealth.

The National Sanitation Foundation, located at Ann Arbor, Michigan, engages in research to seek new facts in sanitary science to bring it up to date with technological advances of industry and with modern problems of the health officer in the field. The Foundation issues a copyrighted Seal of Approval to be used on equipment which has been approved by the National Sanitation Foundation Testing Laboratory.

In August of 1958 the Foundation issued a booklet on food vending machines (56), outlining criteria for the evaluation of vending machines.

The National Automatic Merchandising Association sponsors research at various colleges and universities and sectional conferences throughout the country, such as one held April 29, 1960 in Boston, where a clinic discussed "Maintenance and Public Health".

The importance of proper sanitation procedures in the mass feeding operation cannot be underestimated as first impression are lasting. The vending of food is still a comparatively young venture which could be slowed down considerably if the individual operators do not present a clean machine which vends fresh sanitary food.

As more types of food items are vended, it will become increasingly important that the operator develop his own sanitation procedures to insure satisfactory vending of a palatable product. Sanitation will be a continuous problem which the operator must constantly conquer if he is to expand his food vending operations.

The consequences of the operators not developing proper sanitation procedures could very well cause "the promulgation of a host of unrealistic and highly restrictive codes at various governmental levels." (57)

E. Taxes

1. Per machine tax

Any growing industry will encounter continuing threats of legislative roadblocks to its progress, and the vending

EXHIBIT XXV

Respondents to Health Department Survey

<u>Town or City</u>	<u>Official</u>	<u>Title</u>
Bedford	W. M. Lyons	Health Agent
Belmont	E. L. Tyler, Jr.	Health Agent
Boston	D. G. Milano	Chief of Food Bureau
Braintree	*	*
Brookline	R. F. Wagner	Sanitary Engineer
Cambridge	F. E. Smith	Sanitary Engineer
Chelsea	D. F. Redington	Food Inspector
Cohasset	R. MacIssacs	Executive Health Officer
Dedham	Dr. W. J. Taylor	Board of Health Chairman
Everett	J. F. Sheehan	Milk and Food Inspector
Hingham	T. J. Kearns	Executive Health Officer
Lexington	*	*
Lincoln	*	*
Malden	J. F. Ryan	Executive Health Officer
Medford	*	*
Melrose	J. Devine	Sanitary Inspector
Milton	F. R. Morrisette	Agent
Needham	M. L. Zabbar	Sanitarian
Newton	H. W. Kingsbury	Chief Sanitary Officer
Norwood	*	*
Quincy	Dr. R. M. Ash	Health Commissioner
Randolph	J. H. Dowd	Agent
Reading	*	*
Revere	*	*
Somerville	T. J. Hagerty	Chief Inspector
Stoneham	*	*
Wakefield	K. G. Shaw	Milk and Food Inspector
Waltham	S. T. Oley	Chief Health Inspector
Watertown	P. F. Murray	Sanitarian
Weston	*	*
Westwood	R. J. Hart	Agent
Weymouth	*	*
Winchester	M. J. Saraco	Agent
Winthrop	*	*
Woburn	F. O. Ryan	Director

* Respondent not known

industry is not an exception. In the last few years the various state governments have stepped up their tax programs in search of more revenue to finance the increased budgets voted by their legislative branches. Tax bills pertaining to vending directly or indirectly have been proposed in most of the fifty states and in many cities. Among the bills have been requests for new and higher per machine taxes, business license fees, cigarette taxes, beverage taxes and sales taxes. Some of the bills have already passed, many were defeated, and a few are still pending.

Per machine taxes ranging from \$2.00 to \$60.00 and other discriminatory tax proposals contained in twenty-four separate bills have been advanced in fourteen states. One is still pending and the twenty three others have been defeated.

In 1959, the Massachusetts legislature considered House Bill No. 2344, a copy of which is shown in Exhibit XXVI, page 124.

The Bill requested an excise tax of twenty five dollars upon each vending and dispensing machine in use on the last day of the taxable year. This was the first time that a per machine tax bill had been proposed to the legislature, and in the opinion of Mr. Lucius Foster (58) it is the forerunner of many more attempts that will be made towards enacting this type of legislation.

The Massachusetts Automatic Merchandising Council opposed the proposal which was defeated in the 1959 session. In opposing the Bill the merchandise council stated that,

"the issue is not how much revenue the tax will produce or how much the vending industry can afford to pay, but that House Bill No. 2344 seeks to tax a way of doing business and it is unfair, completely discriminatory, confiscatory and constitutionally questionable." (59)

The Council felt that application of the "per machine" tax principle has the same effect as if each shelf, display case, or cash register were taxed in a retail store. Since a retail store does not incur this tax, it was felt that the law was inequitable as it put the operator at a tax disadvantage.

It is estimated that there are from 100,000 to 125,000 machines in Massachusetts and at \$25.00 per machine the tax would produce a gross revenue to the Commonwealth of from two and a half to three ($2\frac{1}{2}$ -3) million dollars annually. It is further estimated that many machines in operation today are marginal and that if a "per machine" tax were to be imposed, approximately 50 per cent of the present machines in operation would be withdrawn from any sales activity. Instead of producing two to three millions dollars annually for the Commonwealth, the tax would produce a maximum of $1\frac{1}{2}$ million dollars, less the cost of collecting the revenue. (60)

The Operating Ratio Report of 1958 prepared by Price, Waterhouse and Company for the National Automatic Merchandising Association showed that the average vending machine sold the following amounts of merchandise:*

* This report is released only to participating members of the study and the N.A.M.A. These figures appeared in the March 1960 supplement in VEND Magazine.

<u>Product</u>	<u>Sales</u>	<u>Net Profit</u>
1. Candy, gum, nuts	\$455.00 per machine	\$13.00
2. Cigarettes	\$1389.00 per machine	\$39.72
3. Cold beverages - cup	\$1180.00 per machine	\$33.74
4. Hot food	\$1141.00 per machine	\$32.63

If one allows 30 to 50 per cent of the net for income taxes and were the "per machine" tax imposed, it is apparent that it would not leave much for the operator and in many instances would cause particular machines to operate at a loss.

2. Sales tax

Sales taxes have become a major source of revenue for the financing of state services. Thirty-three states now have such taxes on the books, and others are contemplating the adoption of a sales tax. In February 1960 the Massachusetts legislature defeated a proposal for a sales tax. Although the sales tax as proposed would not have any direct effect on vending operators in Massachusetts, it is well to consider the problems that are encountered by operators in other states where there is a sales tax law.

a. Vending machines do not collect odd pennies.

As a result, instead of being a tax on the consumer, it is a tax on the automatic retailer.

The reason for this is that the vending industry largely serves impulse buyers, and lacking the odd penny that is needed he may be inclined not to make the purchase. The problem could be solved

by raising the price the consumer must pay, but in all probability would put the operator at a price disadvantage with other retail outlets.

- b. Many of the older machines are not equipped to handle odd amounts of change and the cost of converting a machine is oftentimes prohibitive. In 1957, the state of New Jersey increased the cigarette tax two cents and it cost the automatic retailing industry in that state an estimated \$80,000 to \$100,000 to convert the equipment just to collect the taxes.
- c. The automatic retailer loses out on "breakage" in the collection of a sales tax. In Illinois (a 3% sales tax state), for example, no tax is collected by regulation on sales below 14¢. Most sales through vending machines are 5¢ and 10¢. Thus, the vender is barred from collecting any tax on the bulk of his sales, yet he must pay the sales tax on his gross receipts. Consider the retailer who makes six 15¢ sales and collects six cents in taxes. He then has the three cents to cover the tax liability on the \$1.00 sale and enough left over to cover ten 10¢ sales where he does not collect any taxes.

EXHIBIT XXVI

HOUSENo. 2344

By Mr. Iannello of Boston, petition of Charles Iannello for
legislation to impose an excise tax on vending and dispensing machines.
Taxation.

THE COMMONWEALTH OF MASSACHUSETTS

In the Year One Thousand Nine Hundred and Fifty-Nine

AN ACT IMPOSING AN EXCISE TAX ON VENDING AND DISPENSING MACHINES

Be it enacted by the Senate and House of Representatives in
General Court assembled, and by the authority of the same, as follows:

1 SECTION 1. Notwithstanding any provisions of law to the con-
2 trary, the commissioner of corporations and taxation shall an-
3 nually assess as of the last day of the taxable year, an excise tax
4 upon each vending and dispensing machine in use in the common-
5 wealth, which tax shall be in the amount of twenty-five
6 dollars for each such machine.

1 SECTION 2. The commissioner of corporations and taxation
2 shall make such rules and regulations as are necessary to enforce
3 the provisions of section one of this act.

SOURCE: MASSACHUSETTS HOUSE OF REPRESENTATIVES HOUSE BILL NO. 2344

The writer feels that the sales tax is inevitable in the State of Massachusetts and that the operator would do well to be on the alert for those phases of a "per machine" tax and a sales tax which will serve to discriminate against him.

F. Vending Industry Statistics

Characteristic of small businessmen, automatic vending operators have been reluctant to divulge operational data even though it would allow the gathering of vital statistics that might be of help to all in the industry, including themselves.

The smaller operators do not have the personnel or the money to spend on gathering statistics that are helpful to the industry's growth. The larger operators collect operational data but use it for their own internal planning and they are hesitant to release it publicly for fear competitors may use it to their own advantage.

There are three agencies that compile and publish statistics for the vending industry. The first is the National Automatic Merchandising Association that publishes data in the Annual Directory of Automatic Merchandising (61). Estimates are made of the total vending sales for the industry and the number of machines in operation. There is a breakdown of the figures for both sales and machines by type of product.

The second agency is VEND Magazine, a bi-monthly publication that publishes data about the current events in the vending industry and annually presents "A Census of the Industry" (62). Throughout the

year the magazine publishes articles about current happenings and in each issue there is an editorial covering a particular subject or problem of interest regarding the vending industry.

The third agency is the Price, Waterhouse and Company, Accountants who prepare an Operating Ratio Report for the vending industry. The study is sponsored by the National Automatic Merchandising Association and in 1960 one hundred and eighty four operating companies with \$90,000,000 in annual sales contributed data to the report (63). The value of the study is questionable as only a small number of companies contribute data and their total sales volume amounts to only four per cent of the 1960 sales volume, as reported by the National Automatic Merchandising Association. The operating companies that contribute to this report are charged a fee proportionate to the size of their company. Several attempts were made by the writer to obtain a copy of the Operating Ratio Report, but those firms having a copy are reluctant to release it. Occasionally excerpts from the report are published in the Directory of Automatic Merchandising and VEND Magazine.

The lack of statistical material has been a handicap to the industry's growth since projected surveys based on past experience have been almost impossible. When interviewing the vending operators the writer was unable to obtain statistical data that would have given an insight into the operating performance of the local vending operators.

What kind of data should the vending operators compile and

release? The following are suggested types of data that might be made available by the vending operators.

1. Gross sales
2. Net income before taxes
3. Net income after taxes
4. Commission costs as a per cent of gross sales
5. Gross margins on various types of products
6. Gross sales categorized by type of product
7. Types of financing
8. Service costs as a per cent of gross sales

It is readily recognized that the release of industry figures shown by individual locality could not be released without disclosing confidential data of individual operators. This particular problem might be solved by an expansion of the present Operating Ratio Report of Price, Waterhouse and Company where the identity of individual operators is protected. The cost of the Report could be subsidized to a greater extent by the National Automatic Merchandising Association.

Along with the release of basic operating data outlined above, the National Automatic Merchandising Association might sponsor special studies regarding mass feeding through automatic vending machines such as:

1. Management attitude towards mass feeding by automatic vending machines.

2. Employee attitudes towards various feeding methods.

3. Current industry feeding practices.

These are some of the opportunities for a long-term research program aimed at the collection of accurate statistics for the automatic merchandising industry in general, and automatic catering in particular.

The collection of valid data can represent an important and valuable service in establishing automatic merchandising as a responsible, dynamic industry. The results could benefit operators, as a group, not only by earning the confidence of prospective location-owners, but also by creating more favorable attitudes among the sources of funds essential for industry expansion.

VIII. SUMMARY AND CONCLUSIONS

A. Restatement of the Findings of the Thesis

In the prior chapters we have examined the components and problems of the automatic vending industry as they pertain to mass feeding by automatic vending machines in the Greater Boston Area.

Examination of the facts presented has led to the following conclusions:

1. Although machine manufacturers have developed better vending machines each year, the present hot food vending machines are still in the experimental stage.
2. Food suppliers are still experimenting with the preparation of hot meals that can be sold through vending machines and offer a wide variety of choices.
3. Vending operators have recognized the need for high quality food vending and are developing their own commissaries for the preparation of foods.
4. Vending companies are in a period of rapid evolution where their complexion is changing from small local operations to national concerns operating in many states.
5. Presently the location-owner is not utilizing vending machines as the primary means of mass feeding the people at the location.
6. The location-owner is not contemplating a shift from manual to automatic vending as the primary source of feeding.

7. In the last few years the need for adequate financing has been a major problem to the vending operator.
8. The large investment in equipment required by the magnitude of the mass feeding operation has caused the operator to more closely examine his costs and in particular the commissions paid to location-owners.
9. The local health departments are becoming more cognizant of their responsibilities towards insuring that proper sanitation procedures are adhered to by the vending operators.
10. The vending industry is constantly being scrutinized as an additional source for tax revenue by both the local and state governments.
11. There is a need for the vending industry to provide statistics which will give an accurate and continuing census of the vending industry.

From the results indicated, it appears that the vending operators in Greater Boston are predominantly offering their vending services as a supplement to existing services now provided either inside or outside the location. In the next section the writer will bring together relevant facts from preceding chapters and discuss the use of vending as the primary means of mass feeding.

B. Automatic Vending as the Primary Method of Mass Feeding

The evolution of mass feeding has occurred in three separate stages.

First, the beginnings of mass feeding were in the vending of a few specialized products such as candy, cigarettes and soft drinks. This kind of vending is the backbone of the industry today. Vending of these products did not displace any established service nor completely fulfill any major, essential function of plant management.

The second stage in the evolution of mass feeding was reached when such food products as milk, coffee and ice cream were added to the list of vended products. These new foods went further toward the complete feeding of industrial workers and posed a partial threat to the income and security of established services such as cafeterias, caterers or carts. The threat was only partial because the product range was still limited and the entrenched service was usually more important to management.

The third stage in the evolution of mass feeding arrived when sandwiches, pastries, soups and limited types of hot foods were added to the list of vended products. Now it became possible to buy a complete meal through automatic merchandising equipment. It was at this point that the automatic vendor became a direct competitor of the company cafeteria operator or the industrial caterer.

In theory the potential for this new automatic feeding service is as great as the potential for any form of in-plant feeding. Perhaps in fact mass feeding through automatic vending could surpass all other forms of automatic merchandising, but practically there are

several limitations on the immediate potential for mass feeding by vending machines.

What are these limitations?

Tradition is the first limitation that must be overcome.

The consumer was reluctant to accept vending in its early stages because his psychology of buying was geared to personal selling. Candy, gum and cigarettes are easily packaged and recognized as to quality. Because of the inadequacy of machines and operators in the early stages of mass feeding, the consumer has been wary of vending except to buy low cost, non-perishable items. As the operator vends more items, higher in price and of a perishable nature, he is competing with a tradition of over-the-counter personal service which may have risen in price, but, on the average, has been satisfactory.

A second limitation is the lack of variety in the meals that can be offered in vending machines. When the variety of food that is dispensed is limited, the amount of impulse buying is reduced. At this particular time there is no escaping the reality that many industrial caterers do offer variety far superior to the range of products now available through vending machines.

A third limitation is the quality of food available from the vending machine. Although the quality of vended food has improved in the last few years, there is considerable room for improvement if the vending operator is to displace any of the existing feeding services.

It is now apparent that the potential for mass feeding through vending machines is considerably less than feeding service to

the nation's entire work force. However, the opportunities are still vastly greater than present penetration of the market.

In what situations has automatic feeding proved most applicable?

The first situation is when the size of the location does not warrant a manual operation due to the excessive amount that would have to be paid out in subsidies by the location-owner. Small plants are more likely not to have any provision for employee feeding and thus the vending operator can offer a new service rather than a substitute.

A second situation where automatic feeding may be used effectively appears to lie in large industrial locations where operations and personnel are dispersed over a wide area; thus, the employees do not use one cafeteria because of the distances involved. The vending operator might be able to demonstrate important advantages to this type of company in terms of cost, reduction in lost time and convenience.

A third situation where automatic feeding may be used effectively is in those firms who are operating multiple shifts that find it impractical to provide manual cafeteria service for all shifts. Vending machines can be used as a means to cut down the expense of feeding "around the clock" and, at the same time, make food available.

A fourth situation favorable to the vending operator is a location away from local eating establishments which cannot support its own manual cafeteria. The consumer is truly a captive one and as such usually provides the operator with an above-average sales volume.

With the shorter lunch hour commonly being used in many industries, there is usually very little time for the worker to travel any distance, eat his meal and be back on the job on time.

Thus, it is clear that automatic vending is now able to offer the supplementary service necessary for those locations where manual cafeterias are not practical. Automatic vending as a primary method of mass feeding is restricted for the present to the particular situations outlined above.

Although operators are finding many of these special situations, they are only placing machines that vend sustaining meals rather than full course dinners. The introduction of Automatic Canteens' "Countervend" and Automatic Retailers of America's "Vendteria", which are a combination of vending and manual installations, is an admission by the two largest companies that the present vending services are not adequate as the primary means of mass feeding.

C. Conclusions

Although in its infancy, mass feeding has proved its usefulness to its greatest user, the working force. How effectively it advances depends on what the vending industry does to improve itself in the "soaring sixties".

In the words of William S. Fishman, President of the National Automatic Merchandising Association:

"Automatic merchandising is considered one of the newest and most promising forms of retailing which as yet has barely tapped its potential both as to type of goods sold and total volume of sales transacted. If we were to share

merely proportionately in the coming growth of America's economy, then this alone would result in a healthy increase. But this isn't enough, because to grow proportionately means that we will fail to realize the potential which everyone both within and outside our industry predicts for us." (64)

The National Automatic Merchandising Association forecasts an industry sales volume of four billion dollars by 1965 or almost double the estimated sales volume of 1960. To reach this projected sales figure, it will be necessary for the machine manufacturers to develop machines capable of serving more complicated types of products without the usual accompanying mechanical failures. Suppliers will have to improve and develop new types of foods and packaging to meet the demands of vending full course meals. The operating companies will have to improve their management techniques in order to deliver better service to the location-owner.

During the "soaring sixties" operators will be looking to develop off-premise consumption markets. If the operator can effectively sell the worker food to eat while on the job, there is no reason why he can't sell the consumer products to use at home. Once firmly entrenched in mass feeding, the operator will have a large market at his fingertips. The sales volume he obtains will be an indication as to how well he utilizes the market.

APPENDIX A

Questionnaire for Vending Operators

NAME OF COMPANY _____ ADDRESS _____

YOUR NAME _____ TITLE _____

1. What year did the company start?

2. What is your type of business organization?

Sole proprietorship

Partnership

Corporation

3. How many persons do you employ?

Full time

Part time

4. Of persons working full time, how many are in the following categories?

Management

Drivers

Clerical

Technical people

Outside salesmen

Others (specify)

5. Are you a member of the National Automatic Merchandising Association?

Yes

No

Massachusetts Automatic Merchandising Council?

Yes

No

6. a. Is the stock of your company sold to the public? Yes No

b. If yes, on which exchange is it traded?

c. If no, do you plan to make a public offering within the

next year

next two years

not at all

7. What were your total sales in the following years?

1959

1958

1957

8. How did your volume of business this year to date compare with the same period in 1959?

Greater in 1960

Approximately the same

Less in 1960

9. Is your business seasonal? Yes No

In what month were your billings highest and lowest in 1959?

_____ Lowest month

_____ Highest month

10. What make vending machines do you buy?

Vendo

Rowe

Stoner

Schroeder

Rudd-Melikian

Wittenborg

Others (specify)

11. Are you engaged in full line vending? Yes _____ No _____

12. What percentages of gross receipts come from

Cigarettes _____%

Pastry _____%

Sandwiches _____%

Coffee _____%

Ice cream _____%

Soft drinks _____%

Hot foods _____%

Others (specify) _____%

13. How do you finance your machines?

_____ From retained earnings

_____ Finance through manufacturers

_____ Finance through banks

_____ Finance companies

_____ Others (specify)

14. What is the average rate of interest that you pay?

15. Check those factors that influence your selection of a vending machine.

_____ Capacity

_____ Coin mechanism

_____ Simplicity of operation

_____ Ease of installation

_____ Finance terms

_____ Design

_____ Cost

_____ Manufacturer

_____ Trade in for old machine

_____ Others (specify)

16. How did your business originally start? Explain

17. Do you have a commissary? ☐ Yes ☐ No

18. Do you intend to change the size of your commissary?

☐ Expand ☐ Keep the same size ☐ Decrease
in size

19. For what reasons do you maintain a commissary? Specify

20. Do you operate a manual feeding division? ☐ Yes ☐ No

21. Do you sometimes engage in manual feeding through another firm?

22. In what type locations have you placed your machines? Please check.

<input type="checkbox"/> Industrial plants	<input type="checkbox"/> Shipyards
<input type="checkbox"/> Bowling alleys	<input type="checkbox"/> Office buildings
<input type="checkbox"/> Military bases	<input type="checkbox"/> Amusement and ball parks
<input type="checkbox"/> Railroad stations	<input type="checkbox"/> Hospitals
<input type="checkbox"/> Bus stations	<input type="checkbox"/> Schools and colleges
<input type="checkbox"/> Airports	<input type="checkbox"/> Others (specify)

23. Do you have contracts with the people who control your locations?

24. Do you pay commissions to the location owner? ☐ Yes ☐ No

If so, what form?

☐ percentage of sales ☐ services (specify)

25. How do you determine the amount of the commission paid to the location owner?

26. Do you have a training program for

Management	<input type="checkbox"/> Yes	<input type="checkbox"/> No	How long?
Drivers	<input type="checkbox"/> Yes	<input type="checkbox"/> No	How long?
Technical			
people	<input type="checkbox"/> Yes	<input type="checkbox"/> No	How long?
Salesmen	<input type="checkbox"/> Yes	<input type="checkbox"/> No	How long?

Is the program formalized?

27. Do you analyze each location as to profit and loss?

_____ Yes

_____ No

What method do you use? Please describe

28. What factors determine your seeking a particular location?

_____ Size of building

_____ Type of manufacturer

_____ Number of people

_____ Traffic around location

_____ Geographics

_____ Others (specify)

29. Do you contribute data to "The Operating Ratio Report" published by Price, Waterhouse and Company?

30. Are you using bill changing machines at the present time?

If so, what type?

31. Do you experience any vandalism on your machines? _____ Yes _____ No

32. Are your machines periodically checked by the Health Department?

If so, which machines are checked?

33. Do you have anything that you would like to add to make this study more complete?

APPENDIX B

Questionnaire for Location Owners

1. What is the total employment of your company? _____
2. Indicate the description best fitting your company's major functions?
 - a. Manufacturer _____
 - b. Distributor _____
 - c. Retailer _____
 - d. Service organization _____
(please describe) _____
 - e. Other (please describe) _____

3. The company's principal products are:
 - a. Industrial goods _____
 - b. Consumer goods _____
 - c. Services and intangibles _____
 - d. Other (please specify) _____

4. How many days per week is the plant operated? _____
5. How many shifts per day does your plant operate? _____
 - a. How many employees on each shift? _____
6. Does the total payroll remain on the same level during the year or do you have seasonal peaks? _____

7. Do you have feeding facilities within the confines of your plant or office building? _____ Yes _____ No
 - a. What kind (specify) _____

8. Are there any food or beverage machines operating in your plant? _____ Yes _____ No
 - a. If yes, what foods are available? What beverages are available?

 - b. If no, have you ever had vending machines? _____ Yes _____ No
 - c. Why did you discontinue their use? _____

9. Approximately how many vending machines do you have? _____
10. Are these machines used as the primary source of feeding? _____

11. Are you planning to add or decrease in number or capacity any of the vending machines you now have? _____ Yes _____ No
- a. Which ones? _____
12. Are you planning to add any new kinds of food and/or beverage machines? _____ Yes _____ No
- a. What kinds? _____
13. How much time is allowed non-executive help for lunch? _____

14. Are the present feeding facilities operated directly by your own firm, by an outside catering firm, or do you have some other arrangement? (please explain) _____

15. Are there public eating places close enough for employees to get a meal during their allotted lunch period? _____ Yes _____ No
16. Could these places handle employee meal demands if you did not provide inplant feeding facilities? _____ Yes _____ No
17. What are the good points of having vending machines?

18. What would you say are the drawbacks? _____

19. Specifically, would you say your vending facilities have a good effect, bad effect or no effect on:
- a. Employee morale _____
 - b. Employee productivity _____
 - c. Employee recruiting _____
 - d. Employee health _____
 - e. Labor management relations _____

20. Would you like to receive a copy of the results of this questionnaire?

_____ Yes

_____ No

PLEASE FILL IN NAME AND TITLE OF PERSON TO WHOM THE
RESULTS SHOULD BE SENT.

NAME _____

TITLE _____

ADDRESS _____

APPENDIX C

Questionnaire for Health Departments

NAME _____ TITLE _____

CITY _____

1. Do you have any health regulations regarding vending machines embodied in your local sanitation rules?

_____ Yes _____ No If so, what are they?

2. If the answer to Question 1 is no, does your health department have any intention of adopting health regulations that pertain to vending machines? _____

3. Do you make any inspection of present vending installations that are located in your city? _____ Yes _____ No

4. Are you familiar with the booklet "The Vending of Foods and Beverages, A Sanitation Ordinance and Code" as published by the Public Health Service in 1957? _____ Yes _____ No

5. Do you wish to make any comments about health regulations that pertain to vending machines?

APPENDIX D

Sample Agreement Between Operator and Location-Owner

AGREEMENT made by and between _____ hereinafter called COMPANY and A, INC., a Massachusetts corporation, having a usual place of business at _____ hereinafter called A.

WITNESSETH THAT,

WHEREAS the COMPANY desires to have installed and operated upon its premises at _____ certain automatic vending equipment as is more fully described in SCHEDULE "A" annexed hereto, and

WHEREAS A has agreed to install and operate upon COMPANY'S premises certain automatic vending equipment as is set forth in said SCHEDULE "A", and

WHEREAS the parties hereto desire to set forth in a general manner the terms and conditions upon which such equipment shall be installed and operated:

NOW THEREFORE, it is mutually agreed as follows:

1. The equipment to be installed and the locations upon the COMPANY'S premises where said equipment is to be installed shall be as set forth in SCHEDULE "A" which is annexed hereto and made a part hereof. No other or additional equipment shall be installed, and no equipment shall be moved from the designated locations, removed, or substantially changed or altered without the prior consent of the COMPANY. It is understood and agreed, however, that the COMPANY shall have the right to have equipment moved from one location to another, on a reasonable basis, as may be necessary for the proper or desired utilization by the COMPANY of its premises.
2. The COMPANY shall provide and maintain suitable electrical and/or water connections at each location designated for equipment requiring such connections. Water and electric current shall be supplied by the COMPANY.
3. The COMPANY shall make appropriate and reasonable provisions so as to allow service and maintenance personnel to get into and out of the COMPANY'S premises in order properly to service and maintain the equipment.

4. All property installed by A is and shall at all times remain the property of A and, except as provided for in this paragraph, A shall stand all risk of loss or damage to such equipment. COMPANY shall cooperate with A in order to facilitate the installation, maintenance and operation of the equipment. COMPANY shall have the duty of using reasonable efforts to protect the equipment from malicious damage by its employees. In the event of theft of money and/or merchandise from said equipment as a result of unauthorized breaking and entering, A shall present a statement of the total financial loss so sustained, together with the circumstances to COMPANY for its review and approval. If COMPANY, in its judgment, shall be satisfied that the loss was occasioned by malicious acts of damage and/or unauthorized breaking and entering by its employees, then the total financial losses so sustained shall be chargeable against any commissions payable or to become payable by A to COMPANY.

5. A agrees to install all equipment as set forth in SCHEDULE "A" including all carpentry, electrical and plumbing work which may be necessary properly to "hook up" the equipment to the water and electrical outlets supplied by COMPANY. All installations shall be completed in a prompt and workmanlike manner.

In the event that during the term of this agreement COMPANY shall require equipment to be moved from one location to another, on a reasonable basis, as may be necessary for the proper or desired utilization by COMPANY of its premises, it is agreed that COMPANY shall provide suitable electrical and/or water connections at any such new location, and A shall move the equipment to the new location and shall be responsible for hooking up such equipment to the electrical and/or water connections so supplied.

6. A agrees that all of its regular service personnel shall be uniformed, neat and clean, and that all of its personnel shall be properly identified and shall respect and obey all of rules and regulations in effect upon COMPANY'S premises.

7. A agrees to provide adequate service for all of its equipment and to keep all equipment in a clean and healthful condition, and in proper working order. COMPANY shall be responsible for cleaning of the vending areas, exclusive of the equipment.

8. A agrees that all merchandise to be vended from its machines shall be first grade merchandise and shall be kept fresh and wholesome at all times, and that all of its installations, equipment, merchandise and operations shall meet all applicable city, state, and national health and sanitation laws and regulations.

9. A agrees to maintain full and adequate insurance coverage at all of its operations so as to protect COMPANY from any liability whatsoever arising from A operations. Insurance coverage shall be as is set forth in SCHEDULE "B" annexed hereto and made a part hereof, and such insurance shall be maintained during the term of this contract and any extension thereof.

10. A agrees to maintain proper records of its sales of merchandise on COMPANY'S premises and such records shall be subject to inspection at all reasonable times by COMPANY'S duly authorized representative.

11. A agrees that the merchandise to be vended and the prices to be charged shall be as is set forth in SCHEDULE "C" annexed hereto and made a part hereof. Sales prices as set forth in SCHEDULE "C" and commission payment rates as set forth in SCHEDULE "D" are based upon Federal, State and local sales and excise taxes existing as at the date of execution hereof. In the event of a change in any such tax rates, sales prices and/or commission rates shall be adjusted to reflect such change on a mutually agreeable basis.

12. A agrees to pay to COMPANY commissions in accordance with SCHEDULE "D" attached hereto and made a part hereof, on the gross receipts from all of its Net Sales of merchandise sold on COMPANY'S premises. (Net Sales shall mean gross sales less stolen, slugs, refunds and token or test coins.) Commissions shall be computed, reported and paid in or within thirty (30) days after the close of each Commission Reporting period on the total New Sales made during the period. Commission Reporting Periods shall be a calendar month.

13. Except as may be otherwise provided for herein or by written agreement between the parties, COMPANY shall agree to and hereby does grant to A the exclusive permission and right to cater, serve, vend and dispense food and foodstuffs, candy, cigarettes, soft drinks and refreshments in general, to the officers and employees of the COMPANY and to such guests and others as may be designated, upon its premises to which this AGREEMENT refers, except for main cafeteria at _____.

14. It is further agreed by and between the parties hereto that this contract shall run for a term of three (3) years from the date hereof, and shall automatically renew itself from year to year thereafter unless written notice of cancellation shall be given by either party to the other party thirty (30) days prior to the expiration of the original term or any renewal thereof.

15. Wherever consent or permission of the COMPANY is required, the COMPANY hereby covenants and agrees that such consent or permission will not be unreasonably withheld.

IN WITNESS WHEREOF the parties hereto have hereunder set their respective hands and seals this _____ day of _____ 19 ____.

By _____

By _____

APPENDIX E

Definition of Terminology Used in Thesis

Automatic merchandising	The selling of goods by machine, used synonymously with "vending" and machine selling.
Commissary	A catering establishment, restaurant, or any other place in which food, beverage, and/or ingredients are handled, prepared, or stored, and from which vending machines are serviced.
Commission	A rental paid by an operator to a location-owner for the privilege of placing a vending machine in a location. The rental fee can be in the form of cash or services rendered for the location-owner.
Location	An establishment, room, enclosure, or site in which a machine or group of machines is placed and operated.
Location-owner	An individual or business concern exercising control over the location.

Operator	An individual or business who by contract, agreement or ownership takes responsibility for furnishing, installing, servicing, operating or maintaining one or more vending machines.
Route	A series of locations called upon by a service man.
Servicing	The periodic refilling of machines, collection of money, and inspection, cleaning, and readjustment of machines.
Subsidy	An amount paid by a location-owner to an operator to operate machines at a location, or an amount paid to an operator to vend the machine's goods at reduced prices.
Traffic	The number of people passing a particular machine. (Time is not a factor)
Vender	A vending machine

Vending machine

Any self service device offered for public use which upon insertion of a coin or bill dispenses unit servings of food, beverage, or non-food items either in bulk or package, without the necessity of replenishing between each operation.

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