A COMPARATIVE ANALYSIS WITH RECOMMENDED CHANGES IN OVERTON'S DISTRIBUTION CENTER

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A COMPARATIVE ANALYSIS WITH RECOMMENDED CHANGES IN OVERTON'S DISTRIBUTION CENTER

By

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CHAPTER I

INTRODUCTION

The phrase "efficiency is the key note to success," has often been voiced within the realm of the business world. The importance of this phrase is well appreciated by members of the food industry. The ever increasing need for greater efficiency in the food business, with particular reference to Overton's Markets, Incorporated, has led the author to a study of food distribution centers. This study was conducted on a limited scale and the procedure followed will be explained in a following section under background of study.

Statement of the Problem

The basic problems of concern in this study involve the methods employed in the operation of the food distribution center of Overton's Markets, Incorporated. The need for the improvement of these methods in terms of efficiency and profitability has led the author to a study of food operations of similar size and volume. Through a study of the procedures adopted by other companies in the operation of food distribution centers the author hopes to uncover what appear to be the best methods to adopt as the solutions to these problems.

Background of the Study

The first step of the study involved the development of a questionnaire to be used in securing the desired information. The questionnaire consisted of nine separate questions with several parts to each question. Ten copies of the questionnaire were made since the author had selected ten food companies as the sample for this study. Seven of the questionnaires were mailed to small food companies engaged in the warehousing function. Five of the companies returned the questionnaire, and the information secured from four of the respondents will be used in the third chapter of this thesis. Due to the size of the fifth respondent's operation, the application, of their procedures to this study was questionable. The four companies involved in this segment of the study are: Associated Grocers Cooperative, Incorporated, Blooming Prairie, Minnesota; Merchants Grocery Company, Incorporated, Falls Creek, Pennsylvania; Market Basket Store, Olean, New York; Independent Wholesale Cooperative Company, Billings, Montana.

The second step of the study also involved the use of the previously described questionnaire as a guide in the personal interviews which were conducted in the three remaining companies. The three companies interviewed were: Plumb's Super Markets, Muskegon, Michigan; Eberhard's Super Markets, Grand Rapids, Michigan; and Meijer's Super Markets, Inc., Grand Rapids, Michigan. The information

secured from two of these companies will appear in the fourth chapter of this study.

A copy of the questionnaire used can be seen in Appendix A, page 107. The material appearing in the body of the study will be explained in such a manner that reference can be made to the questionnaire to facilitate the reader's understanding of the material. Due to the lapse in time between the development and the completion of this study, additional information was secured to bring the study up to date. This information was obtained by mailing a brief resume of each operation, as secured from the questionnaire, to the companies participating in the study. Corrective notes were made by the respondents and these corrections were applied to the appropriate sections of the study. Telephone interviews were also used to up date certain segments of the study.

Reasons for the Study

The author has undertaken a study in the area of Food Distribution Operations, because of the necessity of effecting greater efficiency in this phase of Overtons operation. Through a comparative study of food operations of similar size and volume the author hopes to uncover methods employed by these companies in securing an efficient food distribution operation. The pracitcability of these methods will be evaluated and recommendation for the improvement of Overton's warehousing operation will be forthcoming.

Limitations of the Study

The limitations of a study of this nature must be recognized. The author has limited this study to; the grocery section of the food distribution center with a minimum weekly volume of 60,000 to a maximum of 200,000,000 Food distribution operators of either small retailers or wholesale is supplying several small independent operations.

CHAPTER II

FOOD DISTRIBUTION CENTER PROCEDURES FOR OVERTON'S MARKETS

The distribution of food involves a variety of related activities. Some of these activities are carried on at the distribution center, for example, the physical distribution of merchandise to the nine retail stores. Other functions are performed outside the center, for example, the ordering of new merchandise to be stocked. This chapter will consist of a detailed discussion of the procedures followed by Overton's Markets, in performing the functions of warehousing. The chapter will be divided into several sections to make the material easier to follow and understand.[1]

Overton's Food Distribution Center

Including truck drivers, the Overton Food Distribution Center has seven full time employees. These men work a total of 322 hours weekly. Three of the men work a six to nine hour day, and the remaining four work a five to eight hour day. The weekly grocery volume shipped by these seven employees varies from $66,000.00 to $75,000.00.

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[1]The major portion of the information appearing in this chapter was secured through personal correspondence with Mr. A. W. Overton, owner of Overton's Markets, Incorporated, South Norfolk, Virginia.

The food distribution center contains 30,000 square feet. It is a single story building with reinforced concrete floor. It is centrally located in respect to the nine Overton's Super Markets. The distribution center is approximately eight miles from the furthest retail outlet.

Procurement of Merchandise

Merchandise which is to be stored in the food distribution center is purchased by the buying committee located in the central buying office.

The procedure employed in reordering merchandise for the food distribution center is as follows: Brokers' and manufacturers' representatives are required to maintain a card system recording the movement of the merchandise, as well as a record of purchases. The movement of each item is determined by recording the inventory on each visit and the merchandise received since the last inventory. The beginning inventory, plus merchandise received, less new inventory is compared to the previously entered figure on the inventory control card, thus the movement of the product over a certain period is obtained. The representative then confers with the warehouse foreman and the two men make up a suggested order which is submitted to the grocery buyer. The grocery buyer reviews the order in terms of movement, price, and other related data. The buyer will either approve or alter the order.

The owners of Overton's Markets feel that the policy of utilizing brokers' and manufacturers' representatives to keep records on the movement and buying requirements for the warehouse is the best method due to the size of the over-all operation. Mr. A. W. Overton, grocery buyer for the organization, feels that these representatives do a commendable job in seeing that the distribution center has ample stock and at the same time is not overstocked. Experience has shown that in the majority of cases they do a better job in handling orders for the warehouse than do the members of the Overton's organization. The reason for this is two fold. First, foremen of the distribution center does not have the time required to keep up with the tremendous number of items stocked. Second, records pertaining to movement are not maintained by the company. Representatives who abuse or neglect their responsibilities regarding either an overstocked or out-of-stock condition must account for these conditions to the buyer.

Merchandise which is not serviced through a brokers' or manufacturers' representative is handled by the foreman. The foreman submits suggested orders to the grocery buyer who in turn makes the necessary purchases.

The responsibility for the procurement of new merchandise is shared by the grocery buyer and the buying committee. The grocery buyer presents each new item to the buying committee which accepts or rejects it. The committee

holds a meeting once a week in the grocery buyer's office which is located at Overton's Super Market Number one, 1419 Poindexter Street, South Norfolk, Virginia. The decision of the committee as to the acceptance or rejection of a new item is made at the buyer's office. If the product is accepted the grocery buyer informs the foreman on the quantity of merchandise ordered, and the date the merchandise is due at the distribution center. The foreman also receives instructions on the distribution of the new item to the individual stores. This is a forced distribution, however, after the initial shipment the store managers are required to place their own order for the item. Once the item is added to the category of regularly stocked merchandise procurement is handled in the same manner as other warehouse merchandise.

Special promotional purchases are handled at the buyer's office and directions for store deliveries are given to the foreman by the grocery buyer if the merchandise is to be delivered to the distribution center. In the majority of cases, however, special promotion merchandise is not stocked in the warehouse, but rather the entire shipment is delivered directly to the stores upon arrival. Drop shipments are used only when items require daily servicing.

Composition of Buying Committee

The advertising manager and the grocery buyer along with the nine store representatives are the members of the buying committee of Overton's Super Markets. The committee meets on Tuesday of each week to consider new grocery merchandise. The grocery buyer relays all the information provided by the brokers' or manufacturers' representatives to the committee. During the course of the discussion if any questions arise which the buyer cannot answer, the item is tabled until the information can be secured. If the committee is skeptical about the success of the item under consideration they may suggest that a test be conducted in one or two of the stores. The results of the test will then provide the basis for their decision. If the product is accepted the grocery buyer relays the following information to the foreman of the distribution center:

1. The quantity of new merchandise ordered.
2. The date the merchandise is to arrive at the distribution center.
3. The number of cases of new merchandise to be distributed to the individual stores.

After initial shipment of the new item is made to the stores, the grocery manager of each store is required to place all succeeding order for it.

Receiving Merchandise

When orders are placed with brokers' and manufacturers' representative the delivery date for the merchandise is scheduled to coincide with the days that merchandise will be received in the distribution center. The receiving days are from Monday morning to Friday noon. The warehouse is closed Friday afternoon and Saturday to all incoming merchandise in order to provide employees with time to clean the storage area and rearrange merchandise. The foreman also begins filling store orders on Friday afternoon and Saturday for the following week.

Separate docks are provided for receiving car-load and truck-load merchandise. However, separate docks are not provided for receiving and shipping merchandise by truck. Therefore, if possible, large shipments of merchandise being received at the distribution center via trucks are scheduled to arrive on Wednesday afternoon and Thursday. The reason for this is that very little shipping is done on these two days. As a result there is less chance of congestion at the trucking docks on these days than on Monday and Tuesday when large shipments are being made to the stores.

The procedure followed in Overton's food distribution center for unloading merchandise is as follows. The incoming merchandise is loaded on four wheel trucks and then rolled to the area in which the merchandise is stored. A complete check is made of all incoming merchandise to be certain that

quantities are correct and that merchandise received is in good condition. The number of men engaged in the unloading function will vary according to the size of the order, averaging three. The job assignment of each man is as follows:

1. The number one man helps unload and check the merchandise as the hand truck is loaded, signs the shipping bill, and is responsible for any shortages or damaged merchandise which is accepted.
2. The number two man unloads the common carrier and rolls the loaded hand truck to the area in which the merchandise is stored. This man may also check the quantity and quality of merchandise received.
3. The number three man unloads the hand truck and places the merchandise in a predetermined position in the distribution center.

Ordering Merchandise by Stores

Preprinted order forms are used exclusively by Overton's in ordering merchandise from the warehouse. Items are listed in the order form in the sequence approximating the store layout rather than the warehouse layout.

Each store manager is required to submit an order to the central office, located in South Norfolk, Virginia, on Thursday of each week. These orders are priced at cost and

extended at cost by the office manager and one clerk in the central office. The orders are then checked for correct retail prices by another office clerk, and forwarded to the food distribution center to be filled. The foreman begins shipping merchandise to the stores on Friday of each week, and shipments are completed no later than Wednesday morning of the following week. The order form which also serves as the invoice is then returned to the office to be checked for "dashed items" signifying an out-of-stock condition. After adjustments have been made, product cost is totaled on an adding machine and the order is charged to the retail store.

Assembly of Orders

The following procedure is used in assembling orders for the nine Overton's Super Markets. Orders are assembled on four wheel hand trucks which when loaded are rolled directly into the delivery trucks to be unloaded and returned to the warehouse for further use. In assembling orders for shipment to the stores the usual procedure is to work in teams of four. The function performed by each man appears in numerical sequence below:

1. The number one man has the order form and calls out the desired number, size, and brand of the merchandise; as the merchandise is placed on the hand trucks he checks the item on the order form.

2. The number two man is an order picker.[2]
3. The number three man is also an order picker.
4. The number four man rolls the hand trucks into the delivery trucks and does the unloading. This position is usually filled by the truck driver.

In addition to the four man team, three hand trucks are used in assembling orders. By using three hand trucks there is always a loaded truck ready to be transferred to the delivery trucks. Checking merchandise into the stores may involve one of three methods.

1. Spot check of a few items
2. Complete check
3. No check

Location of Merchandise within the Warehouse

There is no particular system followed in locating merchandise within the warehouse. Items are usually placed where space is available. Little consideration is given to type of merchandise, product group, or relationship to surrounding items. The problem of locating merchandise under a system of this nature is apparent. The loss of time due to the lack of organization is very costly due to the unnecessary duplication of effort in locating and relocating an item while picking an order.

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[2]Order picking involves the selection of merchandise, and loading the hand trucks.

Distribution Center Inventory

A physical inventory is taken in the food distribution center twice a year by one office clerk, the foreman, and the six members of the warehouse crew. The office clerk and the foreman record the quantity and name of each item in stock while the six crew members count the merchandise. In addition to providing the company with a financial picture of the operation, the physical inventory also uncovers slow moving merchandise. These slow moving items usually fall into the following two categories:

1. Items which are not serviced by a brokers' or manufacturers' representative, and
2. Items which are represented by salesmen who have failed to inform the grocery buyer as to the movement of their product.

After slow moving merchandise has been shipped from the warehouse the item or items are discontinued.

Distribution Center Security

In the operation of Overton's food distribution center there are a number of security measures taken to protect the owners' investment. These protective measures include the following:

1. Only those docks which are being used to receive and ship merchandise are opened. All other docks must be closed and locked by the foreman.

2. Only persons on business are allowed in the distribution center.
3. Regular fire checks are made by the foreman and the insurance company representative. This is to check for and eliminate all fire hazards such as defective heating units used in the winter.
4. Electric lights used in the warehouse are turned on and off at the beginning and end of each day by the foreman.
5. The truck drivers are responsible for securing the trucks at the end of each working day.
6. The foreman is the last person to leave the building and must check all docks to see that they are closed and locked. The foreman is also responsible for closing and locking the fire door leading from the grocery section of the distribution center to the produce section.
7. Only the foreman and the owner have keys to each lock in the warehouse.

Mr. A. W. Overton, the owner, makes periodic checks to see that the preceding functions are performed in the manner prescribed by the company.

CHAPTER III

DEVELOPMENT OF WAREHOUSING INFORMATION SECURED BY MAILED OUT QUESTIONNAIRES

The material appearing in this chapter was secured from the information provided by the questionnaire in Appendix A, page 107. The material will be divided into four sections. Each section will be devoted to an explanation of the information secured from each of the four companies participating in the study. This appears to be the most appropriate procedure due to the differences of comments expressed by the respondents. After each company's response has been explained the data will be compiled in a series of tables at the end of the chapter.

Associated Grocers Cooperative, Incorporated

This company is located in Blooming Prairie, Minnesota. The organization consists of 152 stores with a food distribution center located within a three hour driving time of all stores. The distribution center supplies only members of the Association. The volume of the 152 retail outlets varies from $50,000.00 per year to $1,000,000.00 with an average yearly volume of approximately $120,00.00. The company's warehouse is 50,000 square feet with a weekly grocery volume of $110,000.00.

Twenty-five full time employees comprise the warehouse crew with each employee working on an average of forty-six hours per week. The following information involves the procedures employed by the Associated Grocers Cooperative, Incorporated, in performing the functions of a food distribution center.

Procurement of merchandise. In the procurement of merchandise the following four basic categories will be considered:

1. Merchandise which is stored in the food distribution center. The process involved here entails the reordering of items to replenish the existing stock. To facilitate this function the Associated Grocers Cooperative has installed a Remington Rand Inventory Control system to serve as a guide in reordering merchandise.

2. The second category involves the procurement of new merchandise for the company. The responsibility for performing this function is shared by the general manager and the buying committee. The primary function of the buying committee is to decide on the lines of merchandise to be carried whereas the general manager's function involves the acceptance or rejection of individual items in a product group.

3. The third category is special promotion merchandise. The procedure followed in this company is to handle special promotion merchandise in the distribution center and ship

to stores on order placed by the store manager. The manufacturer or broker will, therefore, ship this merchandise to the cooperative's distribution center for distribution to the individual store.

4. The fourth category is drop shipment merchandise. The major portion of the merchandise handled by member stores is distributed directly from the warehouse. Only items requiring daily delivery and service are purchased on a drop shipment basis.

Receiving merchandise in the distribution center warehouse. A conveyor system is used to receive merchandise. The merchandise is placed on the conveyors extending from the carrier being unloaded to the area in which the merchandise is stored. In order to prevent congestion separate docks are used for incoming and outgoing merchandise. However, the two functions are not allocated specific times. Merchandise is unloaded as it arrives at the dock. Store orders are filled and loaded on a weekly schedule for each store.

Ordering merchandise by stores. The member stores use three methods in ordering merchandise from the food distribution center. The three methods are:

1. The order form which is the most important method. This method is used by the individual stores when the weekly grocery order is submitted. The due date for the weekly order form to be submitted to the food distribution center

varies according to the size of the order and the location of the store. Large orders are scheduled to be received at the distribution center one day in advance of delivery while others can be received and assembled on the same day. The combining of store orders on trucks for efficient delivery service regardless of the size of the order, however, Remington Rand equipment is used to price and extend the order form.

2. The telephone is used for "fill in" and special orders to prevent out-of-stock conditions, or in ordering merchandise which was overlooked when the order form was prepared. Delivery service for special orders is limited, however, to available space in trucks covering the location.

3. Manufacturers and Brokers' salesmen are also used occasionally in the ordering procedure of the company. A few of the representatives call on retail stores to aid store personnel in displaying merchandise, suggesting items and quantities to be ordered and other functions relating to the sale of the products they represent.

Order selection. The assembling and shipping functions are also performed through the use of the conveyor system. In the Associated Grocers Cooperative two three-man crews are used to select and assemble store orders. The function of each man is as follows:

1. The number one man calls the item and quantity ordered and then checks the order form as the article is placed on the conveyor.

2. The number two man selects the items and places them on the conveyor.
3. The number three man also selects items and places them on the conveyor.

The merchandise is loaded on the carrier by a fourth person who is not included as a member of the selection team. The merchandise is loaded into the carrier according to the location of the individual stores. That is, most trucks have more than one store order and the orders are loaded for delivery along the route.

Equipment used in the warehouse procedure. According to Mr. Thiede of Associated Grocers the only equipment used in receiving merchandise and in filling orders at the distribution center is the conveyor system. The equipment used in delivering merchandise to the individual stores consists of eight carriers. Seven of the carriers are tractor trailer units and one is a two ton carrier with a twelve foot body.

Location of merchandise within the warehouse. The two procedures followed by this company in determining where merchandise will be stored are:

1. By type of Merchandise Product groups are placed in different areas of the distribution center to facilitate the location of items when filling store orders.

2. By movement. Fast moving merchandise is stored near the shipping docks to reduce time required to assemble these items.

Distribution Center inventory. The Remington Rand method of Inventory Control serves as a guide to reordering merchandise by providing the company with a continuous record of the inventory on hand and sales by item. A physical inventory is taken quarterly. In addition to serving as a check against the perpetual inventory control, this procedure provides the company with information regarding the financial investment in merchandise.

Checking merchandise. One of the most important functions to be performed in the transfer of merchandise is that of checking for correct quality and quantity. Not only is the function important to the profitable operation of the warehouse but also to the retail outlets. There are a variety of methods which may be used, however, the Associated Grocers Cooperative employs the following two:

1. A complete check is made of all merchandise received in the food distribution center. This procedure involves a check of each case received. After each case has been counted, the quantity received is compared with the quantity ordered.

2. A piece count against the order form is made of all merchandise received by the retail outlet. Under this method the total number of items received at the retail

outlet is compared with the total number of items for which the store is billed.

Distribution Center security. There are a variety of protective measures which must be taken by a company to insure the safety of their operation. There were five security measures incorporated into the questionnaire to provide some idea of how responsibility is shared. The five security measures were:

1. Opening the warehouse at the beginning of the day;
2. Closing the warehouse at the end of the working day;
3. Securing the trucks at the end of each day;
4. Turning on the lights when the warehouse is opened;
5. Turning off the lights when the warehouse is closed.

Under the Associated Grocers' method of operation the warehouse foreman is responsible for performing each of these functions. The General Manager makes periodical checks to see that these functions are performed properly.

Merchants Grocery Company, Incorporated

The second company to be considered in this chapter will be the Merchants Grocery Company, Incorporated, located in Falls Creek, Pennsylvania. There are thirty stores which were classified as large stores by the respondent, and seventy-five small stores which include gas stations and

restaurants. The greatest distance to a retail outlet is approximately fifty miles from the center. The driving time to this store is estimated between an hour and a half and an hour and forty-five minutes. The Merchants Grocery Company supplies only members in good standing. The food distribution center contains approximately 30,000 square feet, with a weekly grocery volume of $50,000.00 to $60,000.00. The personnel of the distribution center consists of twenty full-time employees working forty hours per week and one part-time employee working ten hours per week. This includes personnel employed in store engineering, refrigeration sales and services.

Procurement of merchandise. The procedures followed by this company in buying merchandise are as follow:

1. The International Business Machine (IBM) tub file method of Inventory Control is used by this company in reordering merchandise. This system makes possible maximum inventory turnover with minimum "outs" since the buyer is supplied with comprehensive information on inventory and movement of merchandise.[1]

2. The procurement of grocery merchandise is the responsibility of the grocery buyer. The general

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[1]"I.B.M. Accounting for Chain or Wholesale Grocery Distributors, Inventory Control" (IBM publication) p. 6.

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policy followed by the buyer is to accept new items that are presented on a basis that is judged in line with possible movement. The buyer makes every effort to obtain items which are requested, within reason. However, extra brands and labels will not be purchased to satisfy a few grocers, or customers of grocers.[2]

3. According to Mr. Walls of the Merchants Grocery Company special, promotion merchandise is shipped directly from the seller to the individual stores. However, if there is a large quantity of merchandise involved, the order will be shipped to the food distribution center to be distributed to the retail stores.

4. Very little emphasis is placed on drop shipments, however, this system is encouraged by the food distribution center if the retail outlets can move the shipment out in ten days or less, otherwise this procedure is less profitable than buying the merchandise from the warehouse.

Receiving merchandise in the distribution center. Merchandise is received on pallets using fork lift trucks. Merchandise is palletized and placed on racks. An excess of $350,000.00 in inventory is maintained. Separate docks are provided for the receiving and shipping function. The

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[2]Merchants Grocery Company, Falls Creek, Pennsylvania, "New Items" (Company publication, 1958) p. 11.

receiving docks are closed at three P.M. on Thursday and twelve Noon on Friday without exceptions.

Ordering merchandise by stores. All orders are requested to be phoned in collect or if the retail outlets have a scheduled time to place the orders, the warehouse operator will call the retail stores. The code number for each item is read directly from the catalogue and in order, from the lowest code up, since the tub files and the warehouse are arranged in the same order as the catalogue for efficient processing of orders. If only one unit or case is desired only the code number is given to the operator. However, if a half case is desired or more than one case is desired the retailer must repeat that information after the code number has been given. In the event the desired item is out-of-stock the operator will tell the retailer immediately and substitutions can be made if desired. Merchandise being ordered should be called at the rate of more than $100.00 per minute of phone time.

Each member is encouraged to call the order in at the scheduled time to prevent disrupting the warehouse schedule. Some stores are required to place their orders one day in advance, while others are permitted to call the same day the order will be assembled and shipped. After the order is received via telephone the order is billed in the IBM department and forwarded to the distribution center to be shipped.

Order selection. Orders are assembled by the use of a gravity and power conveyor system extending from the shipping docks to all areas of the food distribution center. The conveyors are located on the side of each aisle so as not to interfere with the fork lifts used in receiving.

In the Merchants Grocery Company, four men comprise a team to select and assemble store orders. The function of each man is as follows:

1. The number one man calls the item and the quantity ordered and then checks the order form as the article is placed on the conveyor.
2. The number two man is an order picker.[3]
3. The number three man is also an order picker.
4. The number four man assembles the cigarettes and tobacco for each order.

The orders are loaded on the trucks according to the location of the individual stores. Fish nets are used to separate the orders and prevent confusion when the truck is unloaded at the store.

Equipment used in the distribution center procedure. The equipment used in receiving and shipping orders consist of fork lift trucks and a gravity and power conveyor system extending throughout the warehouse. After the merchandise

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[3]The order picker selects the merchandise as the number one man calls the items off.

is assembled four tractor-trailer units and one straight truck are used in the delivery phase of the operation. With these facilities the company is able to get most of the deliveries made during the first half of the week.

Location of merchandise within the distribution center. Merchandise is located in the food distribution center according to movement. This method of layout usually involves the placement of fast moving merchandise nearer the shipping docks to expedite the assembling function.

Distribution center inventory. In addition to the Inventory Control system made possible through the use of IBM the company takes a physical inventory quarterly. The physical inventory provides the company with the information on the number of stock turns each quarter and also on the financial investment in merchandise.

Checking merchandise. A complete check is made of all merchandise received at the warehouse. This method involves the counting of individual units as the merchandise is unloaded. The number of cases unloaded is then compared to the number of cases appearing on the receiving document. A complete check is also made of merchandise received at the retail outlets from the distribution center. Any error discovered in the order which requires a credit is listed by the driver on a special credit or memo pad. These credit memorandums are made in three copies; pink is the retailer's copy which can be destroyed when the yellow

copy is received. The yellow copy is returned to the warehouse for pricing and will then be returned for credit.[4] The third copy is the original, which remains at the distribution center.

Distribution center security. Numerous security measures which are taken by each company. The following security measures provide the reader with an idea of how responsibility is shared in this company:

1. The foreman is responsible for opening the warehouse and for turning on the lights.
2. The receiver is responsible for closing the warehouse and for turning off the lights.
3. Each driver is responsible for securing the trucks at the end of each working day. Periodic checks are made by the warehouse manager to see that these duties are discharged properly.

Market Basket Stores, Incorporated.

This company serves thirty-one supermarkets located within a two hour and twenty minute delivery time of the food distribution center. The distribution center contains 90,000 square feet with an average weekly grocery volume of $155,000.00 being shipped to the retail outlets. The

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[4]Merchants Grocery Company, Falls Creek, Pennsylvania, "New Items" (Company publication, 1958) p. 8.

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warehouse personnel includes twenty-two full-time employees working forty hours per week. This number includes all employees, not just those employed directly in the distribution of food into and out of the warehouse. The remaining information on this company's operation will involve the procedures followed in the distribution of food to the individual stores.

Procurement of merchandise. In the procurement of merchandise the following four basic categories will be considered.

1. The first category involves the reordering of merchandise which is already stored in the food distribution center. Market Basket Stores, Incorporated use Remington Rand method of inventory control as a guide to reordering. Under this system a perpetual inventory is maintained.

2. The second category is the procurement of new merchandise for the company. Two grocery buyers are responsible for all purchases of new items. A few of the factors to be considered in reaching a decision as to acceptance or rejection of the product are:

(a) The reputation of the company presenting the item and the past success of this company in the local market.

(b) The movement of competitive products already being stocked, and whether the movement justifies the addition of a new item to the product group.

(c) An evaluation of the advertising compaign to be conducted in support of the new item.

(d) The promotional or introductory allowances offered by the manufacturer.

3. The third category is special promotion merchandise. Some special promotion merchandise is shipped directly to the retail outlets, if only a few cases of merchandise is involved. However, in the majority of cases the procedure is to handle this type of merchandise in the distribution center and ship to the stores in accordance with the store's weekly delivery.

4. The fourth categcry is drop shipment merchandise. This company places very little emphasis on drop shipments. Only merchandise which is delivered and serviced daily is handled in this manner.

Receiving merchandise in the distribution center. Pallets and fork lift trucks are used to receive merchandise. The merchandise is either received or loaded on pallets at the warehouse. The pallets are in turn picked up and placed in predetermined areas by fork lift trucks. Separate docks are not provided for incoming and outgoing merchandise, since these functions are allocated to certain times. Merchandise is received during the day and all shipments to retail stores are made during the night.

Ordering merchandise by stores. The printed order form is used. All stores must submit their order three days in advance of delivery. This provides the foreman ample time to schedule the assembling and shipping functions for the most efficient delivery service. Regardless of the size of the order, Remington Rand equipment is used to price and extend orders.

Order selection. Under the system employed by this company, an electric truck is used to assemble orders. Six men are used to select merchandise and load trucks for delivery to retail stores. Store orders are divided in several sections. Each man takes a section of the order and:

1. Reads merchandise ordered.
2. Select items.
3. Loads truck.

The merchandise is loaded on the carrier according to location of stores. The store to receive the first delivery is loaded on the truck last. This is necessary when more than one order is placed in a delivery truck.

Equipment used in the distribution center procedure. Mr. Thomas of Market Basket Stores, stated that the equipment used in center consists of:

1. Fork lift trucks--to receive merchandise.
2. Electric trucks--to fill orders in the distribution center.

Location of merchandise within the distribution center. The specific spot or slot method is used by this company in locating merchandise. Under this system a specific location is set aside for each product.

Checking merchandise. A check must be made of all merchandise received at the retail outlet as well as the food distribution center. There are a variety of methods which may be used in checking merchandise, however, the Market Basket Stores employ the following methods:

1. A complete check is made of all merchandise received in the warehouse. This involves a comparison of the number of cases ordered with the number of cases received. To secure this information, each case is counted as it is received in the distribution center.
2. A piece count against the invoice is made of the merchandise received at some of the retail outlets. This involves a comparison of the total quantity ordered and the total quantity received. The only items which must be checked by piece count are cigarettes and sugar. This procedure is required by the company.

Distribution center Inventory. A physical inventory is taken annually of all merchandise stored in the food distribtuion center. This inventory provides a financial investment in merchandise figure. The physical inventory

also serves as a check against the perpetual inventory maintained under the previously mentioned Remington Rand system.

Distribution center security. The following protective measures were included in the qeustionnaire to secure some idea of how responsibility is shared in this company:

1. Opening the warehouse.
2. Closing the warehouse.
3. Securing the trucks.
4. Turning on the lights.
5. Turning off the lights.

Each of these functions is the responsibility of the warehouse foreman.

Independent Wholesale Cooperative Company

The fourth and final company to be considered in this chapter is the Independent Wholesale Cooperative Company located in Billings, Montana. The organization is composed of ninety-seven stores, supplied by a centrally located food distribution center, which is approximately 238 miles from the farthest located retail outlet. The distribution center supplies only member of the Cooperative. The warehouse contains 60,000 square feet with a weekly grocery volume of $200,000.00. The warehouse crew consists of twenty full-time employees working a total of forty hours per week. The company also uses three part-time employees

working from ten to twenty hours per week. This figure includes managers and clerical personnel in addition to employees engaged directly in receiving and distributing merchandise. The following information involves the procedures followed in the operation of the Independent Wholesale Cooperative's food distribution center.

Procurement of merchandise. Procurement procedures are divided into the following categories:

1. The first category involves reordering merchandise to replenish items in the warehouse. This company uses the International Business Machines (IBM) method of inventory control as a guide to reordering merchandise.
2. The second category involves the procurement of new item for the company. Three grocery buyers are responsible for performing this function. Each new item is discussed by the buyers who decide if the product is to be accepted or rejected. If the buyers are skeptical about an item, tests may be held in a few of the retail stores to determine if the item is acceptable to the public.
3. Special promotion merchandise is the third category. The procedure followed by this company is to handle special promotions in the distribution center with shipments being made to

the member stores in accordance with orders placed by the store manager.

4. The fourth category is drop shipment merchandise. The major portion of the merchandise carried by the member stores is distributed directly from the food distribution center. However, merchandise requiring daily delivery and service is purchased on a drop shipment basis.

Receiving merchandise in the distribution center. Incoming merchandise is palletized and moved by fork lift trucks to the area in which the merchandise is stored. To prevent congestion the company uses separate docks for incoming and outgoing merchandise. However, these two functions are also allocated to specific times. This is due to the fact that merchandise is unloaded at the distribution center immediately upon arrival, and store orders are assembled and filled in accordance with the weekly schedule for each store.

Ordering merchandise by stores. An order form is the only method used by each store in ordering merchandise from the distribution center. The weekly order form must be submitted to the distribution center one day in advance of delivery. This is to prevent an influx of grocery orders at the last minute as well as providing the foreman with time to schedule deliveries. After the orders have been

priced and extended in the IBM department, they are forwarded to the warehouse to be assembled.

Order selection. Merchandise to be shipped to the member stores is assembled through the use of four-wheel trucks pulled by electric or gasoline tractors. Using this method, three men perform the function of selecting and assembling merchandise for shipment to the stores. That is, one man is responsible for filling a section of each order, for example, the vegetable section, while the other men are responsible for filling the remaining section of the order. (Mr. Stienberg stated that the average order picker selects 1,000 pieces in an eight hour shift, under this method of operation.) The four-wheel trucks are pulled to the shipping dock and loaded on the delivery trucks according to the location of the stores.

Equipment used in the distribution center. The receiving equipment consists of fork lift trucks. Four-wheel trucks pulled by electric or gasoline trucks are used in filling orders for the individual stores. The delivery equipment used by the distribution center consists of three tractor trailer units and six straight trucks. The tractor trailer units are used to make the long bank hauls whereas the straight trucks are used for the short bank hauls

Location of merchandise within the distribution center. The specific spot or slot method of locating merchandise is used by this company.

Distribution center inventory. The IBM method of inventory control serves as a guide to reordering merchandise by providing the company with information concerning the inventory on brand and sales by item. A physical inventory is taken semi-annually. The physical inventory provides the company with a procedure for checking the accuracy of the International Business Machines (IBM) method of Inventory Control and also provides information on the financial investment in merchandise.

Checking merchandise. Each warehouse foreman and store manager recognizes the importance of checking merchandise for correct quantity and quality. Independent Wholesale Cooperative Company uses the following two methods:

1. A complete check is made of merchandise received. Under this procedure, each case received in the warehouse is counted. This figure is then compared to the quantity ordered. The actual procedure followed when merchandise is received if first of all to place the code number on each case, the items are then assigned a slot number, and finally the merchandise is counted.
2. A piece count against the invoice is made of all merchandise received by the retail outlet. Under this method the total number of items received at the retail outlet is compared to the total number of items for which the store is invoiced.

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Distribution center security. The following is a list of the security measures, and the person responsible for performing each function.

1. Opening the center; the night foreman is responsible for performing this function.
2. Closing the center; this is the responsibility of the day foreman.
3. Securing the trucks; the manager of the food distribution center is responsible for locking the trucks at the end of the working day.
4. Turning on the lights is the responsibility of the night foreman.
5. Turning off the lights is the responsibility of the day foreman.

TABLE I

PROCUREMENT OF MERCHANDISE

Categories	Associated Grocers Cooperative Inc.	Merchants Grocery Company	Market Basket Stores	Independent Wholesale Cooperative Company
Methods used in reordering Merchandise	Remington Rand	IBM tub file	Remington Rand	IBM Inventory Control
Who is responsible for purchase of new merhcandise	General Manager Buying committee	Grocery buyer	Two grocery buyers	Three grocery buyers
Is special promotion merhcandise shipped directly to stores	No	Sometimes	Sometimes	No
How much reliance is placed on drop shipments	Very little	Very little	Very little	Very little

TABLE 11

RECEIVING MERCHANDISE IN THE DISTRIBUTION CENTER

	Merchants	Market	Independent Wholesale Cooperative

TABLE II

RECEIVING MERCHANDISE IN THE DISTRIBUTION CENTER

Categories	Associated Grocers	Merchants Grocery Company	Market Basket Stores	Independent Wholesale Cooperative Company
What methods are used in receiving merchandise	Conveyors	Fork lift trucks	Fork lift trucks	Fork lift trucks
Are separate docks used for receiving and shipping merchandise	Yes	Yes	No	Yes
Is receiving and shipping an allocated to certain areas	--	--	No	--
Is receiving and shipping allocated to certain times	No	Yes	Receive during day; ship during the night	No
Are exceptions made	--	No	No	No

TABLE III

ORDERING MERCHANDISE BY STORE

Categories	Associated Grocers	Merchants Grocery Company	Market Basket Stores	Independent Wholesale Cooperative Company
Procedures used in ordering merchandise from warehouse	Telephone, order form, manufacturers salesmen	Telephone	Order form	Order form
Receiving store orders in warehouse	Same Day[1] One Day[2]	Same Day One Day	Three Days	One Day
Methods used to price the orders	Remington Rand	IBM	Remington Rand	IBM

[1]Same Day--Orders must be received in the warehouse on the same day the order will be delivered to the individual stores.

[2]One Day--Orders must be received in the warehouse one day in advance of delivery.

TABLE IV

ORDER SELECTION

Categories	Associated Grocers	Merchants Grocery Company	Market Basket Stores	Independent Wholesale Cooperative Company
Procedures used in assembling orders	Conveyors	Conveyors	Electric Truck	Dollies pulled by gasoline or electric tractor
Number of men used in assembling merchandise	Two three men teams	Four men	six men	Three men
Functions of each man				
Number one man	Reads and checks the order	Reads and checks the order	Store Orders are	Each man
Number two man	Selects and places item on conveyor	Order picker	Divided into	Pulls a
Number three man	Selects and places items on conveyor	Order picker	Sections with	Certain Sectior
Number four man		Assembles cigarettes and tobacco for each order	Each man working a certain section	Of order
Location of merchandise in trucks	According to location of stores	According to location of stores	According to location of stores	According to location of stores

TABLE V

EQUIPMENT USED IN DISTRIBUTION CENTER PROCEDURE

Categories	Associated Grocers	Merchants Grocery Company	Market Basket Stores	Independent Wholesale Cooperative Company
Equipment used in receiving merchandise	Conveyors	Fork Lift Trucks	Fork Lift Trucks	Fork Lift Trucks
Equipment used in filling orders	Conveyors	Conveyors	Electric truck	Fork Lift Trucks
Delivery Equipment Tractor--Trailer Straight Truck	 Seven One	 Four One	 Eight Two	 Three Six

TABLE VI

LOCATION OF MERCHANDISE WITHIN THE DISTRIBUTION CENTER

Categories	Associated Grocers	Merchants Grocery Company	Market Basket Stores	Independent Wholesale Cooperative Company
Placement of merchandise within warehouse	1. By type of merchandise 2. By movement	By movement	Specific Spot	Specific Spot

TABLE VII

DISTRIBUTION CENTER INVENTORY

	Associated Grocers	Merchants Grocery Company	Market Basket Stores	Independent Wholesale Cooperative Company
Quarterly	X	X		
Semi-annually				X
Annually			X	

TABLE VIII

CHECKING MERCHANDISE

Independent

TABLE VIII

CHECKING MERCHANDISE

Categories	Associated Grocers	Merchants Grocery Company	Market Basket Stores	Independent Wholesale Cooperative Company
Checking merchandise into warehouse	Complete check	Complete check	Complete check	Complete check
Checking merchandise into stores	Piece count against order form	Complete check	*Cigarettes and sugar checked by piece count	Total piece count against invoice

*Some store managers check all items. Piece count against order form.

TABLE IX

DISTRIBUTION CENTER SECURITY

	Independent

TABLE IX

DISTRIBUTION CENTER SECURITY

Categories	Associated Grocers	Merchants Grocery Company	Market Basket Stores	Independent Wholesale Cooperative Company
Opening Warehouse	Warehouse Foreman	Warehouse Foreman	Warehouse Foreman	Night Warehouse Foreman
Closing Warehouse	Warehouse Foreman	Receiving Clerk	Warehouse Foreman	Day Warehouse Foreman
Securing the Trucks	Warehouse Foreman	Each Driver	Warehouse Foreman	Manager of Distribution Center
Turning on the Lights	Warehouse Foreman	Warehouse Foreman	Warehouse Foreman	Night Warehouse Foreman
Turning off the Lights	Warehouse Foreman	Receiving Clerk	Warehouse Foreman	Day Warehouse Foreman

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CHAPTER IV

DEVELOPMENT OF WAREHOUSING INFORMATION SECURED BY PERSONAL INTERVIEW

The information appearing in this chapter was secured through the use of the questionnaire, Appendix A, page 107, and personal interviews. The interviews were held with the following members of each organization.

Mr. Wood, Warehouse Manager, Meijer's Super Market, Grand Rapids, Michigan; and

Mr. Dewey, Warehouse Manager, Eberhard's Super Market, Grand Rapids, Michigan.

To bring this information up to date, the author mailed letters to each company. Mr. Holton provided the information on Meijer's operation and Mr. Corbett up dated the information to coincide with Eberhard's present operations.

The material will be divided into two sections.

Meijer's Super Markets

This organization consists of seventeen super markets. Grocery merchandise is supplied to these retail outlets by a centrally located food distribution center. The most distant supermarket is sixty miles from the distribution center. The delivery time to this store is approximately one hour and thirty minutes. The grocery section of the

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warehouse contains 90,000 square feet. Thirty full-time employees comprise the warehouse crew with each employee working forty hours per week. The following information involves the procedures used by this company in conducting the operation of the food distribution center.

Procurement of merchandise. In the procurement of merchandise the following four basic categories will be considered:

1. The procurement of merchandise already stored in the distribution center. The IBM Inventory Control System is used by this company as a guide to reordering merchandise.
2. The second category involves the procurement of new items. Under the organizational structure of this operation two men perform this function. The two men are the grocery buyer and the grocery department sales manager. New items are presented to these two men and after such factors as, the reputation of the manufacturer, the success of this product in other markets, and the movement of similar items already stocked, are considered a decision is reached as to whether the item is accepted or rejected.
3. The third category is special promotion merchandise. The procedure followed by this company is to handle large quantities of special promotion

merchandise in the distribution center and make shipments to the stores as orders are placed by each store manager. If the special promotion involves only a few cases, shipments are made directly from the manufacturer to the retail outlet.

4. The fourth category involves drop shipment merchandise. The greater portion of the grocery merchandise carried by each store is handled through the distribution center. Only those items requiring daily delivery and service are purchased on a drop shipment basis.

Receiving merchandise in the distribution center. The equipment used to receive merchandise in the warehouse consists of pallets and fork lift trucks. As merchandise is received it is placed on pallets which in turn are picked up by the fork lift trucks and transported to the section of the warehouse where the item is stored. To prevent confusion and congestion in the warehouse, separate docks are used to receive and ship merchandise. Eight docks are provided in the distribution center. Three of the docks are used to receive. These docks are opened from 7:00 A.M. to 2:30 P. M., Monday through Friday. The only merchandise accepted at any other time is perishable items. The remaining five docks are used to ship merchandise to the stores.

Ordering merchandise by stores. Each store in this organization submits an order form to the warehouse each week. The form is printed by IBM. The following discussion will provide the reader with a better understanding of the procedure followed. Each item appearing in the order form is assigned a code number. In addition to providing information on the size, description and retail price, the order form has four tear strips. Each tear strip has a code number for each item and a column for quantity ordered. These tear strips are filled in by the store manager and submitted to the warehouse. The order form can be used over a four week period, one strip for each week. Orders placed by the seventeen stores located in the city may be submitted on the same day they are filled. This is usually Tuesday of every week. The stores which are located outside the city must submit its orders one day in advance due to the delivery time required to reach these stores. These orders are usually received on Tuesday or Wednesday of each week, and shipped on Thursday. After orders are processed priced and extended at cost and retail, they are forwarded to the distribution center to be filled.

Order selection. Orders for the individual stores are assembled by the use of Rad-ox trucks. The Rad-ox is automatically moved to the various areas of the warehouse by a radio attached to the belt of one of the men comprising the selection and assembling team. In the Meijer's system

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of order selection and assembling the number of men used varies in accordance to the size of the order. The function of the men are as follows:

1. The number one man operates the Rad-ox truck.
2. The number of men who select the merchandise varies in accordance to the size of the orders.
3. After the merchandise has been selected and assembled at the loading docks, two-man crews are used to load the delivery equipment. The orders are loaded according to the location of the stores.

Equipment used in the distribution center procedure. According to Mr. Holton, operations director, the equipment used by Meijer's Super Markets in the distribution center consists of (1) 2 Rad-ox trucks and (2) 8 fork lifts. The equipment used in delivering merchandise to the individual stores consists of four tractors and sixteen trailer units. The extra trailer units are used when an entire trailer unit is filled with a single store order. The trailer is dropped at the store and then picked up after being unloaded.

Location of merchandise in the distribution center. This company uses two systems to locate merchandise in the distribution center. The two systems are:

1. By movement--Fast selling merchandise is placed in areas near the shipping docks to expedite the

assembling and selection of merchandise for store orders.

2. By specific spot or slot--75% of the items received in the center are placed in a specific spot. This procedure is also followed to expedite the assembling and selecting functions. Under this system a number is assigned each item received in the distribution center. The number is placed on the delivery manifest which is forwarded to the IBM room. This number is punched into master card for each item. This card is used to print additional cards used when orders are prepared in the IBM department. When the order is billed on the IBM Accounting Machine the slot number is printed on the invoice. This facilitates order selection as well as the receiving function (At store level)

Distribution center inventory. The International Business Machines method of Inventory Control provides the company with a record of the inventory on hand and sales by item. In connection with this system a physical inventory is taken quarterly.

Checking merchandise. The procedure followed in checking merchandise for correct quantity and quality is very important. The procedures followed in performing the checking function are:

1. A complete check of all merchandise received by the center is made by using the duplicate copy of the purchase order placed by the company. The purchase order contains information on the quantity, the size, and how the item is packed. When the merchandise is received the purchase order becomes the receiving report. The receiving report is used by the receiving supervisor to check the items as they are unloaded from the supplier's truck or railroad car.
2. A piece count against the order form is made of the merchandise received in the warehouse; under this method the total number of cases received at the retail outlet is compared with the total number of cases for which the store is billed. If the check turns up a discrepancy of ten cases or less then nothing is done, however, if the discrepancy involves ten or more cases measures are taken to correct the error.

Distribution center security. The protective measures taken by this company and the employees responsible for performing each are as follows:

1. The warehouse foreman is responsible for opening the warehouse each day and for turning on the lights.

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2. The receiving supervisor is responsible for securing each of the docks and for closing the warehouse each day. This employee is also responsible for turning off the lights.
3. The shipping supervisor is responsible for securing the trucks each day. The trucks are secured with a seal each night and the seal is recorded in the distribution center records. The shipping supervisor is the only individual allowed to break the seal and open the delivery trucks each day.

Eberhard's Super Markets

This organization consists of twenty-four super markets and three food distribution centers. The three distribution centers are located within two hours driving time of each store. There are nine full time employees used in the operation of the company's warehouses. These employees work forty hours per week. The distribution centers are used to supply grocery merchandise to the twenty-four stores of the organization. In addition to these facilities, the company is also a member of Grand Rapids Wholesale Company. The following information involves the procedures followed by Eberhard's Super Markets, Incorporated, in performing the functions of a food distribution center.

Procurement of merchandise. Consideration will be given to the following four basic methods used in the procurement of merchandise.

1. Merchandise which is already stored in the food distribution center. The process involved here entails the reordering of items to replenish the existing stock. This company has installed the IBM method of Inventory Control. This system provided management with information which serves as a guide to reordering merchandise.
2. The second category is the procurement of new merchandise for the company. The responsibility for performing this function rests upon one grocery buyer and a buying committee. The buyer screens all new merchandise and accepts only those items which warrant further consideration, by the buying committee. After the items have been screened by the grocery buyer they are considered by the committee. The buyer makes the presentation to these members from the information provided by the brokers' or manufacturers' representative. After the committee has considered such factors as the size of the potential market for the product in their area, the sales of similar products already carried, and the amount of promotional activity to be conducted by the

supplier, decisions are made as to whether the product will be accepted or rejected.

3. The third category involves the procurement of special promotion merchandise. In this company the procurement of this type of merchandise is handled in the following manner. The initial orders placed by the individual stores are shipped directly from the manufacturer to the retail outlets. However, if special promotion merchandise is reordered by the company, the deliveries are made to the company's food distribution centers. The merchandise is distributed from this point to the stores in accordance with orders placed by the store managers.
4. The fourth category is drop shipment merchandise. The only merchandise which is not handled through the warehouse involves items which are delivered and serviced daily at the individual stores.

Receiving merchandise in the distribution center. This company operaties three distribution centers. Conveyors are used to receive merchandise in two of the distribution centers. The receiving procedure in the third warehouse involves the use of skids transported by power trucks. The skids are stored near the docks of the warehouse. As merchandise is unloaded at the dock it is placed on the skids. As each skid is loaded it is lifted by the use

of power jacks and transferred to the area in which the items are stored. Separate docks are not provided for incoming and outgoing merchandise, nor are these functions allocated to certain areas. However, shipping and receiving are allocated to certain times. Merchandise is shipped from the warehouse to the stcres on Thursday and Friday of each week. Merchandise is received on Monday, Tuesday, and Wednesday of each week. The only exceptions made by this compnay in receiving merchandise is when a refusal to unload a carrier would result in holding the driver in town over the week end.

Ordering merchandise by stores. A preprinted order form is used. The date for the weekly order to be submitted to the food distribution centers varies according to the size of the grocery orders and the location of the stores.

The time interval varies from one day and three days. All orders received from the stores are priced by the use of IBM equipment.

Order selection. The selection and assembling functions of reading the order form, selecting the merchandise, placing the merchandise on the conveyor or skids, and loading trucks are performed by warehouse personnel. Merchandise is placed on trucks according to the location of the stores. The first order to be delivered on the truck

route is the last order to be placed on the truck. Each order is separated in the delivery truck through the use of fish nets.

Equipment used in the distribution center procedure. According to Mr. Dewey, warehouse manager, of Eberhard's Super Markets, the equipment used in the operation of the distribution centers consist of skids, power trucks, and a conveyor system. The equipment used in delivering merchandise to the individual stores consist of seven tractors, nine trailers and two straight trucks.

Location of merchandise within the distribution center. Merchandise is stored in the company's distribution centers by specific spot or slot.

Distribution center inventory. The IBM Inventory Control method provides the company with a perpetual inventory. Reorder stock conditions are called to the buyer's attention daily in the form of signal cards. These signal cards are a by-product of prebilling, and reach the buyer before the corresponding physical stock position is reached.[1] A physical inventory of all merchandise in the warehouses is taken quarterly.

Checking merchandise.

1. Checking merchandise into the center. A complete check is made of all merchandise received. This

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[1]"IBM Accounting for Chain or Wholesale Grocery Distributors, Inventory Control" Grocery Distributor, 1957.

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procedure involves the counting of each case received and comparing this figure to the number of cases ordered.

2. Checking merchandise into the stores from the center. In the Eberhard organization a piece count against the order form is made of each order received by the stores.

Distribution center security. The following security measures have been included as a part of this study to determine how the responsibility is shared under each company's method of operation:

1. Opening the warehouse
2. Closing the warehouse
3. Securing the delivery trucks
4. Turning on the lights
5. Turning off the lights

Under the procedure followed by this company the warehouse foreman is responsible for each of these security measures.

TABLE X

PROCUREMENT OF MERCHANDISE

	Meijer's Supermarkets	Eberhard's Supermarkets
Method used in reordering merchandise	IBM Inventory Control	IBM Inventory Control
Who is responsible for purchasing new merchandise	Grocery Buyer, Grocery Department Sales Manager	Grocery Buyer Buying Committee
Twelve Special Promotion Merchandise Shipped directly to Stores	Sometimes	Sometimes
How much Reliance is placed on drop shipments	Very little	Very little

TABLE XI

RECEIVING MERCHANDISE IN THE DISTRIBUTION CENTER

	Meijer's Supermarket	Eberhard's Supermarkets
What methods are used in receiving merchandise	Pallets and fork lift trucks	Skids and power equipment in one warehouse. Conveyors in two warehouses
Are seperate docks used for receiving and shipping merchandise	Yes	No
Is receiving and shipping allocated to certain areas	--	No
Is receiving and shipping allocated to certain times	Yes	Yes
Are exceptions made	Yes, perishable items are accepted as they arrive	Yes

TABLE XII

ORDERING MERCHANDISE BY STORES

	Meijer's Supermarket	Eberhard's Supermarket
Procedure used in ordering merchandise from the warehouse	Order form	Order form
Receiving store orders in warehouse	Same day[1] One day[2]	One day[1] Two day[3] Three days[4]
Methods used to price orders	IBM	IBM

[1]Same Day--Orders must be received in warehouse on the same day the orders are to be delivered to individual stores.

[2]One Day--Orders must be received in warehouse one day in advance of delivery.

[3]Two Days--Orders must be received in warehouse two days in advance of delivery.

[4]Three Days--Orders must be received in warehouse three days in advance of delivery.

TABLE XIII

ORDER SELECTION

	Meijer's Supermarket	Eberhard's Supermarket
Procedure used in assembling orders	Rad-ox	Skids and conveyors
Number of men used in assembling	The number of men varies with the size of the order	As many as needed
Functions of each man		
Number one man	One man operates the Rad-ox trucks, the number of order pickers varies	Warehouse men call order select
Number two man Number three man Number four man	Two men are used to load trucks and seperate orders	Merchandise and load trucks. Number depends on size of order
*Location of merchandise in trucks	According to location of stores	According to location of stores

*According to location of stores--Most trucks hold more than one store order and the orders are located to coincide with location along the route.

TABLE XIV

EQUIPMENT USED IN DISTRIBUTION CENTER PROCEDURE

	Meijer's Supermarkets	Eberhard's Supermarkets
Equipment used in receiving merchandise	8 Fork lift trucks	Skids on conveyors
Equipment used in filling orders	2 Rad-ox trucks	Skids and power equipment conveyors
Delivery equipment tractors	Four	Seven
Trailers	Sixteen	Nine
Straight trucks		Two

TABLE XV

LOCATION OF MERCHANDISE WITHIN THE DISTRIBUTION CENTER

	Meijer's Supermarkets	Eberhard's Supermarkets
Placement of merchandise within warehouse	By movement 25% Specific slot 75%	Specific slot

TABLE XVI

DISTRIBUTION CENTER INVENTORY

	Meijer's Supermarkets	Eberhard's Supermarkets
Quarterly Semi-annually Annually	X	X

TABLE XVII

CHECKING MERCHANDISE

	Meijer's Supermarkets	Eberhard's Supermarkets
Checking merchandise into warehouse	Complete check	Complete check
Checking merchandise into stores	Piece count against order from	Piece count against order form

TABLE XVIII

DISTRIBUTION CENTER SECURITY

	Meijer's Supermarkets	Eberhard's Supermarkets
Opening warehouse	Warehouse foreman	Warehouse foreman
Closing warehouse	Receiving supervisor	Warehouse foreman
Securing trucks	Shipping superviosr	Warehouse foreman
Turning on lights	Warehouse foreman	Warehouse foreman
Turning off lights	Receiving supervisor	Warehouse foreman

CHAPTER V

SUMMARY OF THE INFORMATION SECURED FROM QUESTIONNAIRE AND PERSONNAL INTERVIEWS

The purpose of this chapter is to provide the reader with a brief description of the methods and systems employed by each company in accomplishing the warehousing function. This includes the receipt of merchandise in the distribution center and the subsequent distribution of merchandise to the retail outlets.

Procurement of Merchandise

The IBM method of Inventory Control is used by four of the companies involved in the study. This system makes possible maximum inventory turnover with minimum "outs" since the buyer is supplied with comprehensive information on inventory and movement of merchandise. The Remington Rand method of Inventory Control, which is similar to IBM, is used by the two remaining companies.

The procedure followed by most of the companies in the procurement of new merchandise is similar in one important respect. This involves the use of a grocery buyer in the procurement of merchandise. Three of the six companies use a grocery buyer or buyers, who are solely responsible for the procurement of new merchandise. One of the companies uses a grocery buyer who screens new items and presents those items warranting further consideration to the buying

committee. In another company, the responsibility for the procurement of new merchandise is shared by one grocery buyer and the general sales manager. In the remaining company the procedure followed involves the use of the buying committee to decide on the lines of merchandise to be carried, while the general manager determines the acceptance or rejection of individual items in a product group.

Two of the six companies representatives (this includes direct and indirect interviews via questionnaires) stated that at no time is special promotional merchandise shipped directly to the retail store. Instead the merchandise is shipped to the companies warehouse for distribution to the stores in accordance with orders placed by the store manager. Three of the remaining four companies allow special promotion merchandise to be shipped directly to the retail store if only a few cases are involved. However, in the event the promotional merchandise involves a large quantity of items, the shipment is delivered to the company warehouse rather than to each store. The final company permits the initial order of special promotion merchandise to be shipped to each retail store. Each succeeding order is handled through the distribution center and is subsequently shipped to the stores in accordance to orders placed by the store manager.

Drop shipments, as a means of securing merchandise appears to be of little importance to the companies participating in the study. Five of the six companies studied use this method of procurement for only those items requiring daily delivery and service. The remaining company encourages drop shipments if the merchandise can be sold within a ten day period. If the requirement for delivery prohibits this, the company handles the merchandise through the distribution center.

Receiving merchandise in the distribution center. Pallets with fork lift trucks are the most accepted method of receiving merchandise in the distribution center of the companies included in the study. This is substantiated by the fact that four of the six companies employ this method of materials handling. This system involves the placement of items on pallets at the receiving platform and the subsequent removal of loaded pallets to a predetermined storage position by a fork lift truck. Of the two remaining companies, one company employes a conveyor system, while the final company uses a conveyor system in two distribution centers and skids with power jacks in the third.

One interesting factor was discovered in reference to the use of dock facilities in receiving and shipping merchandise. The author noted that even though the use of dock facilities differ in one or more respects, each company has devised a system to prevent congestion in these

areas. To clarify this statement the following data will be helpful. Four of the companies use separate docks for receiving and shipping. Two of these four companies also allocate receiving and shipping to certain times, while two do not. The two remaining companies do not allocate the receiving and shipping functions to separate docks. However, the two companies do specify certain times for the performance of these functions. Only two of the six companies make exceptions to these procedures. These exceptions are when:

1. Strict adherence to the rules would work an undue hardship on the driver and the carrier.
2. When perishable merchandise is involved.

Ordering merchandise from the distribution center. The order form represents the procurement procedures followed by the stores in ordering merchandise from the respective distribution centers. Four of the companies use the order form as the exclusive method in ordering merchandise. One of the two remaining companies uses the order form in addition to the telephone and manufacturers' and/or brokers' representatives. This company uses the order form in conjunction with the major weekly goods order. The telephone is used primarily for "fill-ins" and special orders to prevent out-of-stock conditions. The telephone is also

used to order those items which were overlooked when the order form was prepared. Salesmen are used to the extent that they may aid store personnel in ordering items they represent. The final company uses the telephone exclusively in the ordering procedure. Under this companys operation, all orders from member stores are phoned in collect, or if the retail outlets have a scheduled time to place their order the warehouse operations operator will call the store.

The weekly due date for the retail stores to submit their grocery order varies. The usual procedure followed, however, is to require that all orders be submitted either the same day or one day in advance of delivery. Two companies require order placement up to three days prior to delivery. In each case the size of the order and the location of the store appears to be the determining factors. That is, if the orders are relatively large or if the stores are located at a distant point with respect to the warehouse, the orders would be submitted from one to three days in advance of delivery. This procedure enables the warehouse foreman to schedule the assembling and shipping functions for the most efficient delivery service.

IBM and Remington Rand were used by four companies and two companies respectively, in pricing orders.

Order selection. Three of the companies employ the use of conveyors in the assembling function. One of these

companies operates three warehouses. The conveyors system is used in two, while skids and power jacks are used in the third distribution center. Each of the remaining companies employ different methods. The three procedures involve the use of electric trucks, dollies pulled by gasoline, or electric trucks, and the Rad-ox trucks operated by a remote radio attachment.

The number of men used by each company in selecting merchandise varies from one to an undetermined number. As previously explained the number of men used by Eberhard's, varies with the size of the store order. However, the functions performed by the order picking crew in each companies' operation revolve around the following:

1. To read the store goods order and check the merchandise and quantity ordered as the items are selected.
2. Select the merchandise.
3. Place the merchandise in the delivery trucks.

As previously explained, each of the proceding functions are performed by a varying number of men. This depends upon the organization. However, each company follows the same procedure in loading merchandise on the delivery carriers. This system involves the location of merchandise within the carrier to coincide with the location of retail stores along the delivery route. That is the first order to be delivered is the last order loaded. A procedure

of this nature becomes necessary only when more than one order is placed on the same delivery truck.

Equipment used in distribution center. The equipment used by each company to receive merchandise in the center and to assemble orders for the retail stores has been previously discussed in this summary. Therefore, this segment will be devoted to a summarization of the equipment used to deliver merchandise from the center to each retail location. In all but one of the companies, when all or a majority of the delivery equipment consists of tractor trailer units. There appears to be four reasons for the use of these units. The reasons are:

1. Tractor trailers are used to deliver merchandise to stores which are located at greater distances from the warehouse.
2. If one trailer unit breaks down the company can prevent any loss of delivery time by using another trailer.
3. If the grocery order for one store is large enough to require a trailer load, the unit can be placed at the store and picked up after the merchandise has been removed. This procedure prevents any unnecessary loss of time since the tractor can be returned to the distribution center for further use.

4. The larger units reduce the size of the rolling stock fleet, resulting in a possible reduction of the capital investment in rolling stock.

Five of the companies use straight trucks in addition to tractor trailer units. However, in only one company does the number of straight trucks exceed the number of tractor trailer units. With the possible exception of this company, the primary function of the straight trucks are:

1. To deliver goods orders to stores located near the distribution center.
2. To deliver short orders placed during the week, to prevent out-of-stock conditions in the retail outlets.

Location of merchandise within the distribution center. Each of the companies involved in this study follow a definite program in the location of merchandise within the distribution center. The procedure followed by the majority of companies, involves the specific slot or spot method of merchandise location. Three of the six companies use this procedure exclusively, while a fourth company uses this system in locating 75% of the items received in the warehouse. The specific slot or spot method involves the permanent location of an item in a predetermined spot. This system involves the assignment of a slot number to

each product. This number is printed on an invoice which facilitates the subsequent selection of merchandise in the distribution center. The author does not mean to imply that items placed under this method would never be relocated. However, the relocation of merchandise in quantity would be the exception rather than the rule. A few items could conceiveably be variations for one reason or another. For example, seasonal relocation in sales might necessitate the movement of one or more items from one spot to another. The location of merchandise by movement is used by one company exclusively and by two companies partially. This method involves the location of fast moving merchandise near the loading platform to expediate the receiving and shipping functions. The final system employed involves the location of merchandise by type. For example, all canned vegetables are placed in one area, while all canned fruits are placed in a separate area. This system provides only general direction to the location of merchandise within the distribution center.

Physical inventory. A complete physical inventory is taken quarterly by four of the companies'. Of the two remaining companies, a semi-annual inventory is taken by one and an annual inventory is taken by the other. In each company, the physcial inventory is used as a check against the perpetual inventory records, to uncover errors, and to provide the company with information necessary to evaluate the financial position.

Checking merchandise. Each company employes the complete check for all merchandise delivered to the food distribution center. As previously explained this procedure involves a comparison in detail of the merchandise ordered to the merchandise received. This detailed comparison involves a check of the item description, the quantity, the pack and the size. If the merchandise is properly shipped, the delivery ticket is signed by the receiving clerk. If an error occurs or if merchandise is received in unacceptable condition the proper exception is noted on the delivery ticket and the ticket is signed by the driver of the carrier. This information is necessary to substantiate claims made against the agent responsible for the error.

A piece count against the order form is used by four of the six companies in checking merchandise into the stores from the distribution center. This procedure involves a comparison of the total quantity of merchandise ordered against the total quantity received. One company uses the complete check procedure previously described.

Distribution center security. Table XIX will be used to simplify the summarization of individuals responsible for performing the various functions of warehouse security.

The average size of the distribution center of the six companies participating in this study is sixty-five thousand square feet. The number of employees range from nine to thirty, full-time employees working from forty to forty-six

The remaining company uses piece count for grocery merchandise and a complete check for tobacco products.

hours a week, and from two to three part-time employees working from ten to twenty hours per week. The average weekly grocery volume of merchandise shipped from the warehouses is $129,000.00.* These averages include only those companies providing information on their operation in each classification. The driving time to the store located the greatest distance from the warehouse in each company, ranges from forty-five minutes to six hours.

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*These averages include only those companies providing information on their operations in each classification.

TABLE XIX

INDIVIDUALS RESPONSIBLE FOR PERFORMING THE VARIOUS FUNCTIONS OF WAREHOUSE SECURITY

	Opening Warehouse	Closing Warehouse	Turning on Lights	Turning off Lights	Securing Trucks
Warehouse foreman	11111	111	11111	111	111
Receiving clerk		11		11	
Shipping clerk					1
Night foreman	1	1	1		
Day foreman				1	
Each driver					1
Manager of warehouse					1

CHAPTER VI

RECOMMENDATIONS FOR THE IMPROVEMENT OF OVERTON'S DISTRIBUTION CENTER

The purpose of this study has been to gather information related to warehouse procedures which may be used to develop a more efficient and profitable warehousing operation for Overton's Markets. The following recommendations for the improvement of Overton's Warehouse operations are made.

Reordering Merchandise

The procedure used by Overton's of complete dependence of manufacturer's representatives and brokers for ordering merchandise should be discontinued.

The International Business Machines Unit Tub File Method of Inventory Control should be installed and all merchandise ordering should be done by designated employees.[1] This system of Inventory Control will provide the following records and other information needed by Overton employees to order merchandise more efficiently:

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[1]Under the Tub file System, the IBM card punch, accounting machine, reproducer, and sorting machine are used. This system also involves the use of master cards and detail cards. For each product in the warehouse there is one master card; from this card the reproducing machine punches the same information in detail cards for each product unit. The number of detail cards depends on the number of cases of each item in the warehouse. The detail cards are placed in files in predetermined sequence. The detail cards are pulled from the files to fill orders and placed in the accounting machine to prepare invoices.

1. Information regarding item movement. Buyers will be able to buy to a specific rate of stock turn.
2. Reorder points are flagged for the buyers attention. To arrive at a reorder point, the average movement for a given period and the approximate time between the placement of the order and the arrival of the merchandise must be determined. The reorder point assures adequate stocks until the merchandise arrives
3. The tub file duplicates the warehouse inventory in card form. Any difference in the tub file and warehouse inventory is due to errors or shortages.
4. Item turn can be determined and slow movers detected. Product movement reports can be provided for any desirable period.
5. Increased labor efficiency is achieved through better scheduling and more efficient layout.

In addition to the use of IBM for inventory control the equipment can be used to achieve greater efficiency in the handling of:

1. Accounts Payable.
2. Payroll.
3. General Ledger.
4. Accounts Receivable.

Procurement of New Merchandise

The position of a grocery buyer should be created. His function will be to make all buying decisions. The present

buying committee should be abolished. The buyer should be provided a Weekly Movement Analysis report.

Special Promotional Merchandise

In Overton's operation, two factors should be considered to determine whether or not special promotional merchandise will be handled through the Distribution Center.

1. Is the minimum order size compatable with stock turn requirements?
2. Is the cash discount adequate to cover warehouse handling cost?

Ordering Merchandise by Stores

The use of an order form compiled by using IBM cards and equipment is recommended.[2] The order form provides descriptive information as well as code numbers for all items listed. The order form contains four tab strips, each one containing item code numbers. The order form is filled in by placing the quantity ordered next to the code number. The strip is then removed and forwarded to the IBM department for processing. (See Appendix B, page 113.) The advantages derived from this type of order form are:

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[2]IBM Order Form. The master cards print information regarding pack, size, description, cost and code number on the order form.

1. New order forms are printed every four weeks.[3] (Under the system employed by Overton's, large quantities of printed order forms were purchased to achieve a more favorable price structure.[4] In a few weeks this resulted in an obsolete listing of merchandise handled in the distribution center.)
2. A record of weekly store orders for each item is provided. This information serves as a guide in preparing the store order.
3. Printing costs are reduced since the item description and code numbers are printed by the IBM Accounting Machine from master cards.
4. Mailing costs are reduced since only the order strips are sent to the distribution center.

Order Scheduling

Store orders should be received by the warehouse on schedule usually one day in advance of delivery. Store deliveries will be by schedule and additional deliveries by special arrangement only.

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[3]May vary in weeks, however, four weeks appear to be the most acceptable period.

[4]Overton's order form contained information regarding the description of each item including the pack, size, cost in the warehouse at the time the order form was printed.

Pricing Goods Orders

The IBM equipment will be used to price orders. (See Appendix C, page 115.) Detail cards are pulled from the tub files in accordance with the orders placed by retail outlets. The detail cards are then run through the accounting machine which automatically prints the information contained in the card on the invoice. The invoice would then be forwarded to the warehouse to be filled and shipped to the retail stores. The advantages of this system are:[5]

1. Order picking will be more efficient. Items can be listed on the invoice in the same sequence as the merchandise is arranged in the warehouse.
2. Items can be located to achieve the most efficient use of warehouse space. This is possible since the arrangement can be entirely independent of the order form sequence.
3. Items which are out of stock will not be printed on the invoice.
4. The total number of pieces can be automatically printed on the bottom of each invoice. This piece count is used; to determine truck requirements, assigning personnel to select merchandise and checking merchandise into retail stores.

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[5]Personal interview with Norman Powers, IBM representative.

An additional advantage accruing to Overton's will be a reduction in cost as compared to the manual procedure employed. The pricing of ten orders at cost and retail represented a weekly cost of approximately $190.[6] Under the IBM method, the same functions could be performed for approximately $77.[7]

Location of Merchandise Within the Warehouse

Specific or fixed slot. The fixed slot system will be used for high volume items.

Floating slot. The floating slot system is to be used for seasonal, special promotional and slow moving merchandise.

Advantages of the floating slot.[8]

1. Automatic stock rotation is achieved.
2. Merchandise received for special sales promotion is placed in the warehouse without assignment of a special area.

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[6]This cost was provided by Mr. A. W. Overton. The cost is based on wages paid and supplies used in the pricing function. The rate per hour for each employee was multiplied by the number of hours each employee devoted to this function.

[7]This cost was derived by dividing the rate per month for the complete IBM Tub File installation by four to achieve the weekly cost. This figure was divided by total weekly operating hours. The cost per hour was then multiplied by nine. This figure also includes the cost of supplies and labor. The rate per hour paid IBM operations was multiplied by nine representing the time required to pull the grocery orders each week.

[8]Powers, op. cit.

loaded pallets from the receiving docks to the storage areas by a high lift fork truck. The high lift truck would be used to vertically store merchandise in the storage areas as well as along the selection line.

The equipment necessary to accomplish the receiving function is:

1. One low lift truck to transfer loaded pallets to the receiving dock. The cost of this truck is approximately $3,000.
2. One stand-up reach type high lift truck that will operate in a six foot aisle. The cost of this truck is approximately $4,000. This truck will be used to transfer and vertically stack merchandise in the reserve area and along the selection line.
3. Pallets. The palletized program will be built around a 32" x 40", two-way, non-reversible, hardwood pallet. Pallets cost approximately $2.50 each.

Dock facilities for receiving and shipping merchandise. The structural facilities at Overton's Distribution Center do not provide separate docks for receiving and shipping merchandise. Separate receiving and shipping docks are desirable to:

1. Prevent conjestion and the resulting inefficiency.
2. Simplify the scheduling of deliveries.

3. Achieve an efficient relationship between the internal operation of the distribution center and the activities performed in the receiving and shipping areas. (See Appendix D, page 117.)

Order selection. The most efficient order selection system can be developed through the use of four wheel hand trucks and a tow unit, which offer:

1. Greater flexibility,
2. Greater productivity, and
3. The cost of this system is reasonable.

The type and function of the equipment used to accomplish the order picking function would include:

1. Pallet Racks--Racks should be installed to develop a selection line for pallet loads. The racks will be used to achieve full utilization of the cubage without sacrificing selection.

2. Shelving--Shelving is used in the small goods area to further develop the selection line.

3. Pallets--The 32" x 40" pallet would also be used in order selection.

4. Four Wheel Trucks--These units would be used to achieve mobility in the order picking function. The cost of each unit would be approximately $120.00.

5. Tow Truck--This tow truck would be used to transport four wheel trucks along the selection line to the marshalling area.[10]

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[10]The marshalling area is a portion of the distribution center used to assemble retail store orders prior to loading.

Orders will be divided with segments with one man selecting each segment. Empty pallets will be placed on four wheel trucks located along the selection line. The order picker selects the items and places each case on a pallet. The four wheel truck will be pulled by a tow truck along the selection line to the marshalling area or to the shipping dock if delivery equipment is available. The fork lift truck will be used to load the trucks. A proposed work schedule is provided in Table XVII. This table is based on the following figures:

Average number of cases shipped each week--14,000

Average number of cases selected per hour, per man--90

Number of hours necessary to accomplish order selection approximately --156

TABLE XX

PROPOSED WORK SCHEDULE

Shipping Days	Number of Hours Devoted to Order Selection	Number of Order Pickers	Number of Cases Selected
Thursday	8	2-1/2	1,800
Friday	9	4	3,240
Saturday	9	4	3,240
Monday	9	4	3,240
Tuesday	8	2-1/2	1,800
Wednesday	4	2	720

Delivery equipment. Under Overton's operation, the rolling equipment consists of eight straight trucks. However, the capital investment and operating cost of rolling

equipment could be reduced by the use of larger tractor-trailer units. The present rolling stock represents a total capital investment of approximately $57,144.80. The total cost is explained as follows:

#32,000.00--Cost of eight trucks when new

$18,720.00--Labor cost of six full time drivers at a weekly cost of $60.00 each

$ 460.80--State and city license $57.60 per truck

$ 1,464.00--Insurance coverage, $183.00 per truck[11]

$ 4,500.00--Operating cost[12]

$57,144.80--Total

The present rolling stock should be replaced with two tractors, four trailers, and one straight truck. The factors leading to this recommendation include:

1. A total piece count of merchandise shipped from the distribution center weekly.
2. The case capacity of each trailer.
3. The time necessary to load and unload each trailer.
4. The delivery time to and from each store.

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[11]Mr. Bradley Spencer, Commercial Insurance Agency, Portsmouth, Virginia. This includes $100,000 coverage upon injury to one person, $300,000 coverage for one occurrence involving more than one person; $25,000 property damage.

[12]The operating cost includes gas, oil, tires, repairs, and depreciation. Operating cost figured on a per mile basis of 15¢ and then multiplied by total yearly milage of 30,000.

5. The number of stores requiring the spotting of a trailer.

6. Allowance for equipment breakdown.

The total cost based on the previous recommendations would be approximately $40,793.76. This cost is explained as follows:

$12,000.00	-- Cost of four 35 foot single axel trailers (3,000.00 per unit)
$12,000.00	-- Cost of two model 1800 International Tractors with 342 cubic inch and heavy duty clutch and rear end
$ 1,152.00	-- License, $576.00 per tractor
$ 48.00	-- License, $12.00 per trailer
$ 7,800.00	-- Labor two drivers, $75.00 per week
$ 514.98	-- Insurance, two tractors $257.49
$ 103.00	-- Insurance four trailers (10% of cost of tractors $25.75)
$ 2,185.18	-- Approximate operating cost of tractor-trailer units[13]
$ 750.00	-- Operating cost of straight truck
$ 4,000.00	-- Cost of one straight truck
183.00	-- Insurance
57.00	-- License
$40,793.76	-- Total

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[13]This is an approximate operating cost based on the following information:

Case capacity of straight truck, approximately - 500
Case capacity of tractor-trailer, approximately 1200
Total cases shipped from distribution center per week, approximately 14,000
Number of straight truck loads per year -- 1,456
Number of tractor-trailer loads per year-- 624

The average number of miles traveled per load is 206. This

Yearly operating cost for tractor trailers will vary in accordance with the number of orders placed on each unit. For example, if only one order is placed on a trailer the average distance would be 20.6 miles. If two or more orders are placed on a trailer the total yearly operating cost would be increased at the rate of seventeen cents per mile. However, if deliveries are properly scheduled operating cost will not significantly be affected in Overton's operation. The function of scheduling is facilitated under the present operation since each store invoice contains a total piece count figure. This figure could be used by the warehouse supervisor in determining routes and truck requirements.

The one straight truck proposed under this program would be used to deliver "fill in" orders or to complete regular deliveries when the quantity of merchandise to be shipped does not warrant a trailer. The actual yearly operating cost would be difficult to determine since the mileage would vary from week to week. However, based on the maximum use of the straight truck under the present operation the yearly operating cost would be $750.00.

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figure was derived by dividing the total yearly mileage of 30,000 by the total number of straight truck loads per year.
The average mileage of 20.6 multiplied by 624 provides a yearly mileage for tractor trailer units of 12,854 operating cost per mile .17¢.

The tangible savings realized from the use of tractor-trailer as opposed to straight truck is approximately $16,351.04. This savings does not include such intangible factors as employee fringe benefits.

Placement of merchandise in the delivery trucks. The merchandise would be placed according to the location of the retail stores to be served. Under this system the last order to be delivered is the first order to be placed on the truck. Fish nets would be used to separate each order.

Warehouse Inventory. Based on the use of IBM a physical inventory should be taken semi-annually. A physical count at the end of each six month period is adequate to provide:

1. A check against the IBM system in relation to the perpetual inventory. This will uncover errors which have been made in processing merchandise through IBM, or errors which have occurred in the distribution center.
2. The information necessary in determining the financial status of the company and in developing the financial statements as required by law. However, the author does not rule out the advisability of spot check of stock as a safety precaution.

Checking merchandise into the warehouse. A complete check of all merchandise is necessary to insure correct receipts. After the check has been completed the receiving clerk signs the delivery ticket and requires the endorsement of the transportation agent if exceptions are noted.

Checking merchandise from warehouse into stores. The use of the IBM equipment facilitates using a piece count by supplying the total number of units invoiced.

Warehouse security. The warehouse security is primarily the responsibility of the warehouse foreman. However, the assignment of opening and closing the warehouse, turning on and off the lights and securing the trucks to the qualified members of the warehouse crew is recommended.

Summary

Procurement of merchandise. The IBM method of Inventory Control and Accounting is recommended based on the following advantages:

1. Better inventory control.
2. Increased stock turnover.
3. Automatic store billing.
4. Invoice lists items according to warehouse layout.
5. Stock outs are not billed.
6. Warehouse efficiency increased.
7. Buying signals.
8. Better accounting reports on sales and profits.

Special promotional merchandise. Promotional merchandise should be handled in the warehouse only when the cash discount is large enough to defray the handling cost, and when the minimum order size meets minimum stock turn requirements. The only exception to this rule might possibly rest in realization of a reduction in freight charges imposed when merchandise for several stores is delivered to one location. This may be termed "extra service" performed for the retail stores.

Drop shipments. The use of drop shipments should be limited to those items requiring daily delivery and service or special promotional merchandise.

Ordering merchandise by stores. The IBM printed order form is recommended for ordering merchandise from the warehouse. This system is recommended because:

1. Order forms are printed every four weeks, thereby assuring the store manager of a complete and correct listing of merchandise available.
2. Space is provided for store ordering history.
3. Printing and mailing costs are reduced.

Order scheduling. The factors to be considered when developing rules related to the receipt of store orders are:

1. Size of the orders.
2. Number of orders per week.
3. Size of work force.

4. Availability of storage and dock facilities.

5. Order filling speed.

The order picking function will be scheduled to coincide with the receipt of store orders.

Location of merchandise within the warehouse. The use of the fixed slot for high volume items and the floating slot for low volume items and items affected by seasonal variations is recommended. To achieve this the selection line would be divided into two sections.

Receiving and shipping merchandise. Pallets and fork lift trucks are recommended for the following reasons:

1. The adaptability of the pallet and fork lift truck to the structure under consideration.
2. The operations of the pallet and fork lift truck system is economical and efficient.
3. More efficient use of space is possible.
4. Shipping and receiving can be performed simultaneously under the palletized system.

Placement of merchandise in the delivery trucks. The placement of store orders according to the location of the retail outlets to be served using fish nets to separate orders is recommended.

Warehouse inventory. A physical inventory every six months is recommended.

Checking merchandise into the warehouse. A complete check is recommended to insure the correct receipt of merchandise.

Checking merchandise into stores. The total piece count figure provided by IBM offers store managers an economical check of merchandise received from the distribution center.

Warehouse security. The warehouse foreman must assume the final responsibility in all matters involving the warehouse security.

CHAPTER VII

CURRENT AND PROPOSED OPERATING PROCEDURES OF OVERTON'S DISTRIBUTION CENTER

The purpose of this chapter is threefold:

1. To summarize the systems employed by Overton's at the inception of this study.
2. To discuss recommendations related to changes in the distribution center.
3. To consider the results, both realized and anticipated, of these recommendations.

Changes have occurred in the distribution center since the inception of this study. Therefore, the preceding points will be discussed under two broad classifications:

(a) Current operating procedures.

(b) Proposed operating procedures.

Current Operating Procedures

The decision by management to initiate changes in the food distribution center operation resulted from an analysis of the information secured in this study. That is, the economic feasibility of a change was proven by the successful acceptance of the systems by companies of comparable size and volume.

The first classification in which a change has occurred is in the procurement of merchandise. The IBM tub file method of inventory control has been installed. This system is being used by Overton's to:

1. Print order forms every four weeks for retail stores.
2. Print invoices for retail stores. The use of IBM in the invoicing function has, reduced the personnel required,[14] reduced the time necessary to accomplish this function,[15] and reduced the possibility of error by reducing the extent of dependance on the human factor.
3. Provide perpetual inventory information.
4. Provide warehouse stock movement information. One of the most significant developments resulting from this system originated from the movement analysis report. The inventory of one department was reduced from $45,000 to $25,000, in six months. The factor accounting for this inventory reduction was a stricter control over quantities purchased. The movement analysis report provided the information to accomplish this in addition

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[1]Under IBM, one full-time and one part-time employee are used.

[2]Approximately 18% of the time is devoted to invoicing under IBM. Mr. A. W. Overton stated that from 50 to 100% of the time of each employee was devoted to invoicing under the manual procedure.

to being helpful in buying new items and discontinuing old items. In conjunction with the application of the movement analysis report to a program of discontinuing items, the following procedure has been adopted. Since March 15, 1963, IBM movement reports have been sent to each store manager. Each store manager was asked to check those items which should be continued despite poor movement figures. One-half of this program has been completed and approximately 500 items have been discontinued as a result of these findings. The grocery buyer also uses this movement report in buying new items.[16] The procedure followed involves a study of the movement of a similar item already stocked in the distribution center.

5. Printed price change reports and new item listings are sent to the stores weekly. This enhances the flexibility of the system by facilitating the immediate distribution of new merchandise and by keeping retail prices current.

The approximate weekly cost of providing the foregoing information is $144. This is less than pricing the

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[3]The grocery buyer replaced the buying committee previously used in purchasing new merchandise.

orders at cost and retail under the manual system previously employed by Overton's.

Special promotion merchandise. The curent system continues to use special orders. However, if the cash discount is large enough to cover handling cost, the merchandise is handled through the distribution center. This is to effect economics in freight charges and to reduce the time and personnel necessary to handle store door deliveries.

Drop shipments. The original policy established by Overton's limited this procedure to those items requiring daily service and delivery. This is being continued and has been expanded to include those items which can be ordered economically in quantities that will provide a stock turn every two weeks.

Receiving merchandise. The use of pallets and fork trucks has resulted in greater utilization of warehouse facilities. The increase in warehouse utilization has for the first time placed management in a favorable position for developing additional business without an accompanying increased investment in building. The number of employees actively engaged in the warehousing function has been reduced from seven to four. This reduction in personnel has been made possible due to:

1. The use of the palletized system in receiving.
2. The increased selectivity of merchandise in the order picking function.

The cost of installing the palletized system was approximately $24,000. This cost includes pallets, pallet racks, and one high lift truck.

Dock facilities. The current operation involves the use of separate facilities to accomplish shipping and receiving. The results have been a smoother flow of merchandise into and out of the distribution center. The dock facilities have been located to coincide with the internal functioning of the distribution center. All receiving is done in the storage area and all shipping is limited to the order picking area.

Ordering merchandise by stores. The current procedure involves the use of the IBM catalogue to order merchandise. The store orders must be in one day in advance of delivery.

Checking merchandise. The procedure followed in checking merchandise into the distribution center remains the same. Store receiving is checked by piece count provided on the IBM invoice. The total piece count method offers Overton's a fast and economical check of merchandise and an assurance that losses due to improper receipt of merchandise are at a minimum.

Warehouse inventory. No change in taking a physical inventory in Overton's distribution center has been made.

Warehouse security. The responsibility for the security of the distribution center is delegated to members of the warehouse crew, with the warehouse manager

responsible for seeing that the security measures are properly performed.

Proposed Operating Procedures

Order selection. Store orders continue to be selected by teams of from three to four men.[17]

Delivery equipment. Eight straight trucks continue to be maintained by Overton's Markets. However, recently Mr. A. W. Overton negotiated with a transportation company to rent tractor trailer units for the larger store orders. This procedure involves the spotting of empty trailers at the distribution center and the subsequent removal of the loaded trailers to the retail outlets. This procedure has been very successful and the author feels this experience will ultimately lead to a complete change from straight trucks to tractor trailers.

Conclusion

The purpose of this study has been to develop and recommend a system which when applied to Overton's Food Distribution Center would affect a more economical and efficient distribution of merchandise. This study has been helpful in that many of the recommendations have been adopted with favorable results. Additional changes are planned. For example; order selection procedure will be

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[17] The number of men engaged in order selections depends on the size of the order and whether or not shipping and receiving are being conducted simultaneously.

changed to the palletized system to accomplish efficient and economical distribution of food.

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Correspondence

Associated Grocers Cooperative, Incorporated
Blooming Prairie, Minnesota

Merchants Grocery Company, Incorporated
Falls Creek, Pennsylvania

Market Basket Stores, Incorporated
Olean, New York

Independent Wholesale Cooperative Company
Billings, Montana

Personal Interviews

Mr. Dewey, Warehouse Manager, Eberhard's Super Market, Grand Rapids, Michigan

Mr. Wood, Warehouse Manager, Meijer's Super Market, Grand Rapids, Michigan

Mr. A. W. Overton, Owner, Overton's Markets, Inc., South Norfolk, Virginia

APPENDICES

APPENDIX A

QUESTIONNAIRE

QUESTIONNAIRE

1. Procurement of merchandise

   (A) Which of the following methods is used by your company in reordering merchandise for the warehouse?

   IBM inventory control _____
   Stock card _____
   Other (explain)_____

   (B) Who is responsible for the procurement of new merchandise in your company?

   Owner _____
   Buyer _____
   Buying Committee _____
   Other (explain)_____

   (C) Is special promotion merchandise shipped directly from seller to store?

   Yes _____
   No _____

   (D) How much do you rely on drop shipments?

   Very little _____
   Moderately _____
   Quite a bit _____

2. Receiving merchandise in the warehouse

   (A) In receiving merchandise, which of the following procedures is used in your company?

   Pallets with fork lift _____
   Skids _____
   Hand trucks--two wheel _____
   Hand trucks--four wheel _____
   Other (explain)_____

   (B) Are separate docks used for incoming and outgoing merchandise?

   Yes _____
   No _____

(C) If separate docks are not used, is receiving and shipping allocated to certain areas?

Yes _____
No _____

(D) Is shipping and receiving allocated to the time of day, such as morning and afternoon?

Yes _____
No _____

If so, do you make exceptions?

Yes _____
No _____

3. Ordering merchandise by stores

(A) Which of the following methods do your stores employ in ordering merchandise from the warehouse?

Telephone _____
Order form _____
Hand written orders _____
Company salesmen _____
Manufacturers' salesmen _____
Other (explain)_____

(B) How soon does the order have to be received at the warehouse before it is assembled and shipped?

Same day _____
One day _____
Two days _____
Three days _____

(C) What procedure is followed by your company in pricing the goods ordered?

IBM _____
Hand priced _____

4. Order selection

(A) Which of the following procedures is used by your company in assembling orders for the individual stores?

Two wheeled hand truck _____
Four wheeled hand truck _____
Dollies pulled by towline _____

4. Order selection (continued)

Perimeter towline _____
Hand trucks pulled by electric or gasoline tractor _____
Conveyor _____
Other (explain) _____

(B) How many men comprise a team under the preceding method of assembling merchandise?

One man _____
Two men _____
Three men _____
Four men _____

(C) What functions do each of the men in the team perform?

Number one man _____
Number two man _____
Number three man _____
Number four man _____

(D) How are orders assembled in trucks; that is, if several orders are loaded in a truck, how are they separated?

According to size of order _____
According to location of stores _____
Other (explain) _____

5. Equipment used in the warehouse procedure

(A) Equipment used to receive merchandise in the warehouse:

Pallets with fork lift _____
Skids _____
Hand truck--two wheel _____
Hand truck--four wheel _____
Other (explain) _____

(B) What type of equipment is used in filling orders for the individual stores?

Skid _____
Hand truck--two wheel _____
Hand truck--four wheel _____
Other (explain) _____

(C) What type and how much equipment is used for the shipment of merchandise from the warehouse to the individual stores?

Tractor-trailer _____ Number used _____
Straight truck _____ Number used _____
Explain (size) _____

6. Location of merchandise within the warehouse

(A) What procedure is followed in determining where specific types of merchandise will be placed within the warehouse?

Specific or floating spot (slot) _____
By type of merchandise _____
By brand _____
By movement _____
Other (explain) _____

7. Warehouse inventory

(A) How often does your company take a physical inventory?

Quarterly _____
Semi-annually _____
Annually _____

8. Checking merchandise

(A) What procedure does your company follow in checking merchandise into the warehouse?

Brand identification _____
Piece count _____
Spot check _____
Complete check _____
Other (explain) _____

(B) How is merchandise checked into the store from the warehouse?

Piece count against order form _____
Other (explain) _____

9. Questions on the general operation of your business

(A) Who is responsible for performing the following functions of the warehouse operation?

Opening warehouse _____
Closing warehouse _____
Securing trucks _____
Cutting on lights _____
Cutting off lights _____

(B) How many square feet is the grocery section of your warehouse?

Square feet _____

(C) What is the weekly grocery volume shipped from the warehouse?

Tons _____
Dollars _____

(D) How many men are employed in the warehouse?

Full time _____
Part time _____

(E) What are the number of hours worked during a typical week by a full time employee? _____

By a part time employee? _____

(F) How much time is required to ship merchandise from the warehouse to the store which is located the greatest distance from the warehouse?

Fifteen minutes _____
Thirty minutes _____
Forty-five minutes _____
Sixty minutes _____
More (explain) _____

(G) Do you supply merchandise to other independent retail operations in your area?

Yes _____
No _____

10. Additional remarks:

THANK YOU FOR YOUR COOPERATION

APPENDIX B

STORE ORDER FORM

DATE OF PRINTING | |

OVERTON'S MARKETS

STORE ORDER FORM

PACK	SIZE	ITEM DESCRIPTION	SHELF PRICE	STORE RECORD 4	3	2	1	DATE STORE ORDER # 4 ITEM CODE		DATE STORE ORDER # 3 ITEM CODE		DATE STORE ORDER # 2 ITEM CODE		DATE STORE ORDER # 1 ITEM CODE	

APPENDIX C

PRICING FORM

OVERTON'S MARKET

DATE

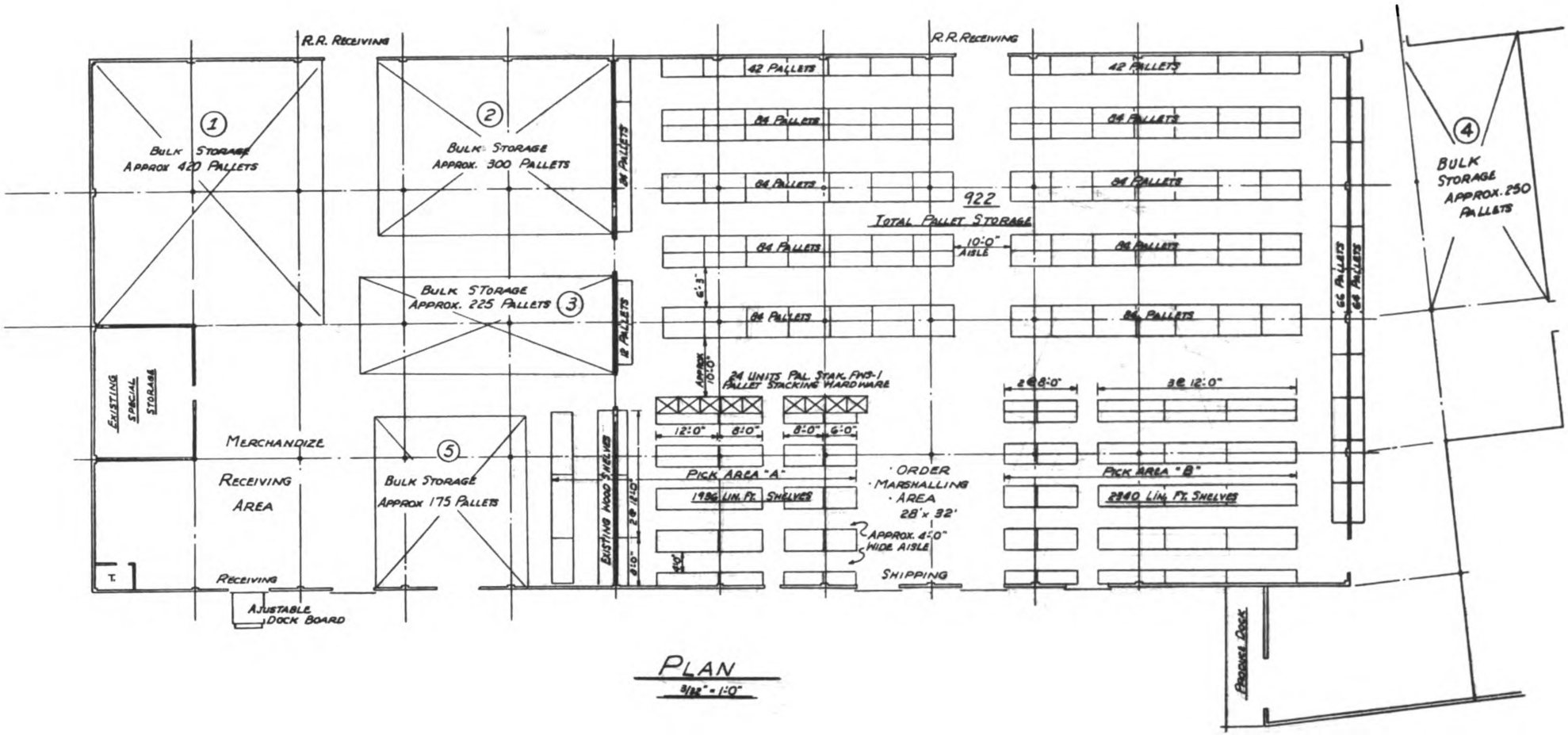
NO.

STORE INVOICE

PACK	SIZE	ITEM DESCRIPTION	SHELF PRICE	ITEM CODE	LOC.	QTY.	STORE USE	RETAIL EXTENSION	UNIT COST	COST EXTENSION

APPENDIX D

PHYSICAL LAYOUT OF WAREHOUSE


R.R. RECEIVING
R.R. RECEIVING
1
BULK STORAGE
APPROX 420 PALLETS
2
BULK STORAGE
APPROX. 300 PALLETS
3
BULK STORAGE
APPROX. 225 PALLETS
4
BULK
STORAGE
APPROX. 250
PALLETS
5
BULK STORAGE
APPROX 175 PALLETS
EXISTING
SPECIAL
STORAGE
MERCHANDIZE
RECEIVING
AREA
RECEIVING
ADJUSTABLE
DOCK BOARD
42 PALLETS
84 PALLETS
84 PALLETS
84 PALLETS
84 PALLETS
84 PALLETS
84 PALLETS
84 PALLETS
84 PALLETS
84 PALLETS
84 PALLETS
84 PALLETS
66 PALLETS
66 PALLETS
922
TOTAL PALLET STORAGE
10'-0"
AISLE
6'-3"
APPROX
70'-0"
24 UNITS PAL. STAK. FNS-1
PALLET STACKING HARDWARE
12'-0"
8'-0"
8'-0"
6'-0"
2 @ 8'-0"
3 @ 12'-0"
PICK AREA "A"
1986 LIN. FT. SHELVES
PICK AREA "B"
2940 LIN. FT. SHELVES
ORDER
MARSHALLING
AREA
28' x 32'
APPROX. 4'-0"
WIDE AISLE
SHIPPING
EXISTING HOOD SHELVES
8'-0"
2 @ 12'-0"
8'-0"
PRODUCE DOCK

PLAN

3/32" = 1'-0"