AgEcon SEARCH
RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

The World's Largest Open Access Agricultural & Applied Economics Digital Library

This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.

Help ensure our sustainability.

Give to AgEcon Search

AgEcon Search
http://ageconsearch.umn.edu
aesearch@umn.edu

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

Distribution Strategy and Cost Analysis

Presented by ARTHUR S. GRAHAM, JR.

Emphasizes the need for more detail in distribution in cost analysis and discusses a case example of means for achieving the goal.

ARTHUR S. GRAHAM, JR., *is responsible for the Physical Distribution practice in the New York Office of A. T. Kearney & Company, Inc., the international management consulting firm. He holds B.S. and M.S. degrees in Industrial Engineering from Columbia University, and is a New York licensed Professional Engineer. Mr. Graham has supervised numerous assignments for A. T. Kearney in physical distribution, including a large number for the food industry. Before joining Kearney, he was Manager of Physical Distribution at Sterling Drug, Inc. Prior to that he served for ten years with General Foods, related to domestic and international operations in distribution and related areas. His most recent position with General Foods was as Operations Development Manager, Distribution/Sales Services Division.*

All of the elements of physical distribution design are exceedingly important. However, unfortunately there are still some major problems to be overcome before significant physical distribution improvements may be effected in most companies. In our experience, the lack of adequate physical distribution cost data is one of the most serious problems facing physical management. The other two are:

1. An inadequate reservoir of qualified, trained and properly motivated people for managing physical distribution and
2. A lack of management commitment to the P-D concept.

Distribution costs in most companies are usually too gross and not available in the fine detail needed to conduct an accurate evaluation of alternative distribution methods and systems. Many of the costs that should be in view are hidden in freight bills or vendor invoices and buried in other cost centers, such as manufacturing and marketing. Another aspect of this problem is the normal practice of accumulating sales volumes by production and warehousing locations, the sources from which shipments are intended. In physical distribution it is vital to flow all costs forward to the markets, to the revenue sources, so that costs can be compared to revenues and the profitability of individual customers, orders and so forth can be accurately determined.

Most companies have a great deal of the data available, though it is in the form of original documents such as freight bills and invoices. However, in this form the data is of no value when it comes to analyzing costs to determine the best course of action to be followed.

In the United States the physical movement of products from plants to markets is estimated to cost close to $200 billion. This almost 20 per cent of our gross national product.

Physical Distribution Costs as a Percentage of Sales . . .

With respect to individual industries, physical distribution costs range from a low of 10 percent of sales in the machinery industry to a high of 30 percent in the food industry, and these figures do not reflect what is thought by many to be a major cost of distribution – the cost of lost sales.

In a recent survey of industrial distribution trends which we conducted for a client, we developed the following information on each of the individual functional activities and the per cent each is of company sales.

In the over-all picture the cost of distribution amounted to 21.8 per cent of net sales.

The individual cost elements defined in the survey were administration, which accounted for 2.4 per cent of the net sales dollar: transportation divided as between inbound at 2.1 per cent and outbound at 4.3 per cent, receiving and shipping at 1.7 per cent, packaging at 2.6 per cent; warehousing, with inplant warehousing amounting to 2.1 per cent and field warehousing amounting to 1.6 per cent; inventory holding or ownership costs amounting to 2.2 percent of net sales and taxes; insurance, obsolescence and other inventory carrying costs amounting to 1.6 per cent; and order processing and related data processing activities amounting to 1.2 per cent of net sales.

These figures are broad industry averages and of value only in a general way in helping to develop a better perspective on physical distribution.

In 1950, Peter Drucker pointed out in a Fortune article entitled "The Economy's Dark Continent," that, considering all distribution costs including wholesaling and retailing, and I quote, "Almost 50 cents of each dollar the American consumer spends for goods goes for activities that occur after the goods are made." Small wonder then that there is a tremendous surge of interest in distribution, and in particular its physical aspects.

I think the quickest way to bring home to you the thinking that must precede the establishment of an adequate cost system from the standpoint of physical distribution is to talk about a specific case study. Consequently, I'd like to review with you a study that we completed not too long ago for a company that has a direct store delivery operation similar to the kind with which many of you are familiar.

This company is one of three major manufacturers of the product in question in the country. There are many regional manufacturers in this product category. The company's sales have been growing at a substantially slower rate than the two other national competitors and their gross margins were significantly better than their competitors. Thus, and as a result of additional analysis of the P&L statement, we concluded that substantial profit improvement opportunities existed by improving the efficiency and effectiveness of the selling operation.

After a subsequent analysis we learned that the marketing operation expenditures were increasing quite rapidly in the last five year period and it was believed that they were growing more rapidly than that of the two other national competitors. Therefore, we decided to take a look at their selling and delivery operation to find out if opportunities existed to reduce costs while improving the effectiveness of the operation.

As will be indicated, we found substantial improvement opportunities and the company is now doing much better as a result of implementing the study's recommendations.

We're going to talk about optimizing profits by analyzing and controlling selling and delivery activities.

Study objectives. The specific objectives in the study were to improve selling and delivery operations because we were quite sure that expenses had increased more dramatically and significantly in this area than they had for the two major regional and local competitors.

The next objective of the study then was to find ways to optimize net profits. Now I did not say maximize net profits, because I'm not sure that profit maximization is really an objective that many companies should strive to achieve in the short-run. I said optimize profits, because sometimes you must carry low profit or nonprofit items and you must handle low profit customer-types in order to successfully sell the balance of your products to selected market segments. Therefore, we generally say optimize net profits rather than maximize them.

Let us take a look now at the background of the company so that you can understand the product sold, the method used to serve the market, etc. First of all, the company manufactures and sells bread, cookies, snack items, etc. to selected retail outlets in the geographic area served.

The company serves the eastern United States and generated sales of about $42 million per annum at the time studied. Net after tax profits reached $350,000 which is substantially below competitions' on a relative basis. The company serves 85,000 customers.

They consist of eight major classifications. First of all the company sells its products to non-service independent grocery stores. There are the grocery stores that do not require stock setting and shelf merchandising. The second classification includes independent restaurants. These vary from such famous restaurants as the Four Seasons in New York City to Joe's Greasy Spoon on the corner of 10th and Main in Nowhere, U.S.A.

The next major category includes institutions including schools, hospitals, penal institutions, etc.

The company also serves what it calls the other classification which includes all those customers not delineated in other categories.

The company also sells to wholesalers and jobbers who in turn resell the merchandise to selected retail outlets.

The company serves chain grocery stores which include such outlets as Star Markets, A&P, etc.

The next category includes service independent grocery stores. These are the independent grocery store operations that require stock setting and shelf merchandising.

The final category includes chain restaurants such as the Hot Shoppers, Stouffers, etc.

As can be seen, the company had a virtual army of sales and delivery men in the areas served. The sales force includes 400 salesmen, 200 delivery drivers or route drivers and 115 supervisors to guide, lead and direct the activities of the salesmen and delivery men.

We first analyzed selling and delivery operations, pinpointing areas of strength and weakness in these activities. The relative value or importance to us of all the grocery stores in the country which make up the market is of prime importance. We wanted to take a look at grocery stores initially because, as you will see, these are by far the most important market segment served. There are 5,600 grocery stores in this country who generate sales of over $2 million per annum. These comprise only 2.5 percent of all grocery stores in the country but account for 28 percent of total grocery store sales.

Approximately thirteen and one half per cent of all the grocery stores in this country account for 69.6 per cent of the sales. Further, 18.2 per cent of all grocery stores account for 76.1 per cent of the sales and 25.7 per cent of all the grocery stores in this country account for 82.7 per cent of the sales. Thus, it becomes clear that the company should direct its effort towards those 13 per cent to 25 per cent of the stores accounting for 70 per cent to 85 per cent of all grocery store sales. Serious questions can be raised as to the advisability of serving stores generating sales of under $150,000 per annum.

The next question raised was what is the relative value to us of our customers by type? The chain grocery outlets (numbering 11,800 in total or 14 per cent of the 85,000 customers served) generated sales of about $18 million for the company. This means that some 14 per cent of all the outlets accounted for 43 per cent of total sales. By combining chain grocery and service grocery outlets, some 22 per cent of the customers accounted for 66 per cent of total sales.

Further, by combining chain grocery, service grocery and non-service grocery, 73 per cent of all our customers accounted for 87 per cent of total sales.

Next we analyzed accounts by monthly dollar purchases to find out what the relative importance to us is of our customers by size. Here we found that only 18 per cent of all of the accounts generated sales of over $50.00 a month. Thus, some 15,000 or 16,000 of the 85,000 accounts served can be termed large accounts. Conversely about 36,000 or 37,000 accounts generated sales of under $10.00 a month.

Since the company was calling on all accounts a minimum of once every two weeks, serious questions started to develop as to the advisability of continuing to offer this kind of service to the smaller accounts.

Next we analyzed the orders received by size trying to determine the relative importance of the orders received by size. Here it was found that about 50 per cent of all of the orders received were for less than $10.00. Twenty-seven per cent of the orders were for $20.00 or more. This resulted in processing some 220,000 orders per month.

We now started to wonder how effectively the salesmen were managing their time. The salesmen were making 47 per cent of all their calls in the non-service grocery segment of the market. This segment of the market accounted for just 21 per cent of all the sales. Next we found that 18 per cent of the calls were being made on independent restaurants generating 5 percent of the sales and we were only making 15 per cent of the calls on chain grocery outlets (and you will remember that this is a most significant outlet in terms of sales) while they were accounting for 43 per cent of all the sales.

Combining the first two categories, non-service grocery and independent restaurant, 65 per cent of the sales calls were generating 26 per cent of total sales. Looking at it another way, we would say that 35 per cent of the sales calls were generating about 75 per cent of the sales.

We now began to suspect that the salesmen had a serious imbalance in their sales efforts and that we would have to find a way to re-orient the salesmen to calling on those accounts which can generate more volume or have the reasonable expectation of doing so in the near future.

We then asked how effective the salesmen were in selling to various customer types. Sixty-two per cent of all the sales calls resulted in an order and, in total, the range in order sizes varied from $6.41 for independent restaurants to $44.32 for chain restaurants.

Specifically we found that 55 per cent of the sales calls made on non-service grocery outlets were resulting in an average dollar value per order of $9.20 compared with the overall average of $18.36.

Forty-three per cent of our sales calls resulted in an order in the chain grocery area. The average order size in this category was $21.94.

We next asked how many accounts require stock setting and shelf merchandising, recognizing that this is an important cost element for the sales force. We found that shelf service frequency varied from 0 per cent for independent restaurants and institutions to 78 per cent for service grocery outlets.

Of course, according to the definition, 100 per cent of the service grocery outlets should receive shelf stocking because this is the way the category is defined if it is not a chain grocery outlet. In total, 12 percent of all the accounts serviced required shelf merchandising and 45 per cent of all the sales volume sold required shelf merchandising.

In chain grocery outlets, 27 per cent of all the outlets which are serviced account for 43 per cent of the total sales in this category.

We now started to see that tremendous inequities were resulting in the sales effort and that steps had to be taken to increase the sales force's pay-off consequences.

Next we determined the cost per call by outlet type. In order to do this, it was necessary to determine how much it cost to have a salesman in the field. Studies showed that the annual cost to have a salesman in the field including take-home pay, fringes, travel expense, etc., totaled $12,360.00 a year or $.1073 per minute. We see that these costs were divided among district and regional expenses with such things as salesmen' salaries, salesmen's expense and collateral costs or fringe benefits being the most significant cost factors. It was interesting to note that there were some 25 categories of expense that we defined. The expenses not only included district expenses and supervisory salaries, etc.; but also regional expenses consisting of supervision salaries, clerk and secretarial salaries that were a direct result of the sales activity, vacation pay, miscellaneous supplies as a direct result of sales activities, etc.

It was next important to determine how much it cost to have a driver in the field so that we could develop a profit center for each customer served. This would be done by measuring the amount of time spent by the salesmen and route delivery drivers in servicing the accounts.

It was found that it cost $17,200.00 to keep a route driver in the field. This compares to the $12,360.00 to keep a salesman in the field. On a per minute basis it cost us $.1493 per minute to keep a route driver in the field. As before, there were some 24 or 25 categories of expense delineated, the major expenses being driver's wages, regional collateral costs and gasoline and oil.

We next asked how long it takes to make a sales and service call. In order to solve this problem we employed the use of industrial engineers who were experienced and skilled in taking time studies.

These men rode with a selected sample of salesmen and route drivers for several days. During this time, they analyzed how each man spent a day breaking it down into some 15 or 16 categories.

As a result of this effort, we found that the salesmen's time can be broken down into fixed and variable minutes per stop. Fixed minutes per stop being the amount of time required to drive between accounts, park the car, get out of the car, walk into the store, come back to the car, start the car and get ready to go to the next account while filling out the paper-work. It was found, and this is just a selection of trade classes, that it takes 6.130 fixed minutes per stop to call on those non-service grocery outlets delineated as Trade Class No. 1.

In addition to this, on the average, it took .221 minutes per stop to make the call. Thus in total, in Trade Class No. 1, it required 6.315 minutes per stop. Similarly, Trade Class No. 2 required 6.53 minutes per stop and Trade Class No. 3, 9.260 minutes per stop.

This kind of an analysis was made for each trade class delineated.

In addition we found that the service calls could be broken down into fixed and variable minutes per stop. For example, it takes 10.550 fixed minutes per stop on the average in Trade Class 1 to make a service call. In addition it requires .527 minutes of variable time. In total it requires 11.077 minutes to make a call in Trade Class No. 1.

There weren't any accounts in Trade Class No. 2 requiring service calls, therefore the time requirement in this case would be zero minutes for the service call.

We were now in a position to determine the profitability by customer type and specific customer. The company generated sales of $42 million and net profits of $350,000 in total. Trade Class No. 6, chain outlets, generated more net profit than any other trade or than all other trade classes combined. In fact, Trade Class No. 6 generated profits of $897,000 or 5 percent of net sales.

Similarly, Trade Class No. 1, the non-service grocery outlets who by and large are the small Ma and Pa type grocery stores, generated sales of $8.8 million but generated a net loss of $768,000 accounting for 8.7 percent of total sales.

Now the question became, what should we do with these various trade classes generating a loss, should we decide not to call on any accounts within these trade classes or should we continue to call on selected accounts within a trade class?

It was next important for us to analyze net profits generated by monthly purchases. An account must generate on an average over $50 a month in order to be profitable for the company. In other words, any account generating sales up to but under $50 per month, was creating a loss for the company.

It can thus be concluded that there are some accounts in each trade class that generate a profit for the company and others which do not. Therefore, the conclusion at this point was that we should drop all of the accounts in a certain trade class in an effort to improve overall corporate profitability. Instead, we should analyze each and every account for its existing sales volume, profit contribution and potential and make a decision whether to continue to serve it or not giving consideration to these factors.

We next asked what is a break-even order size for each customer type? The average break-even order sizes vary depending upon whether the account received shelf service or not and depending upon which trade class the account fell into. With no shelf service the average break-even order size varied from $6.01 for the others category up to $8.33 for institutions and wholesalers and jobbers. The average break-even order size in chain grocery outlets with no shelf service was $7.87. With full shelf service, the average size varied from $11.44 for the others category to $15.25 for chain grocery outlets.

Thus we were able to draw certain conclusions about existing selling and delivery activities. First of all, there was over-emphasis on mass distribution. In talking with the Vice President of Marketing it became clear that he desired to sell to every retail outlet that would purchase the merchandise. It was his feeling that it was important to have the company's merchandise displayed in every retail outlet for its advertising value.

The Vice President of Marketing said that if a person shops in a small grocery outlet that cannot generate a profit for the company and sees its products there she will, if she doesn't buy the product in that outlet, buy it when she's in a chain grocery store because of previous President of Marketing's mind it was important to have and continued exposure to the product. So in the Vice the products displayed in as many outlets as possible so that the company could maximize sales.

However, it became obvious that a change in approach was necessary. We calculated that the company was spending substantial sums of money in conducting this kind of "advertising campaign" – approximately $2 million per annum.

While one can argue the value of mass distribution as an advertising function, it's important for every company to find out exactly how much it is spending for this kind of activity so management will be in a position to evaluate whether or not this expenditure is worthwhile. It became apparent to us, that in this case, a new approach was necessary to serving the market.

Let us discuss the method used to solve the problem. Several approaches were used in evaluating alternative selling and delivery methods. First of all, we conducted attitude research among customers and prospects. We wanted to find out what we had to do as a company in order to successfully compete in the marketplace.

After conducting this attitude research, we listed all of the new and alternative sales methods that could possibly be employed. This included the exclusive use of brokers or jobbers or institutional food distributors, route drivers who would sell and service accounts simultaneously, etc.

Next, we eliminated those high-risk approaches, those approaches we did not feel could be followed because of the high marketing risk involved. Then, after eliminating these high risk approaches, we were left with a few approaches that were to be given detailed economic evaluation. We next had to find out which approaches made sense for our company from an economic point of view.

We then selected the best methods considering the relative degree of risks involved in the remaining approaches and the economics of them.

The next step was to implement the desired system or systems and develop some kind of a program to control the plans to be sure that we were making the progress that we had hoped for.

Attitude research answered the following basic questions. What are customer sales and service preferences? How often do we have to call on them? What are the shelf merchandising requirements by account, the delivery methods, and schedules we had to meet, etc. How can sales and service activities be expanded and/or reduced to increase sales and profits? How can sales and service activities be modified to improve profits? How effective are our salesmen and route drivers from a qualitative point of view? (Here we wanted to find out if our men were as effective as competition's.) Finally, what is the best mix of marketing activities to optimize sales and profits?

In total we analyzed 13 different selling and delivery systems, 10 of which were totally new approaches and 3 of which were modifications of existing approaches.

After detailed examination of the qualitative factors surrounding the various approaches, we decided to eliminate 8 of the 10 new approaches examined, thus leaving two to be given detailed economic evaluation. Of the modified approaches studied we eliminated one thus leaving two to be given detailed economic evaluation. In total we then studied four alternative selling and delivery activities from an economic point-of-view.

One of the first alternatives that we studied was the possibility of utilizing warehouse delivery as opposed to direct-store-delivery. Recognizing that it would probably not be possible for us to convert all chain, etc. operators to warehouse delivery at one time, it became important to determine what the profit opportunities would be, assuming that 50 per cent of our sales to chain, etc. operators who had warehousing facilities, would go through the warehouse. Then what would happen if 80 per cent of the volume went through warehouses, and finally if all of the volume went through warehouses.

It was found on this basis, that if 50 percent of the volume went through a warehouse, we would be able to offer up to an 8.27 per cent functional discount to our customers for warehousing our bread, cookies, crackers, etc. If 80 percent of our volume went through warehouses, we could offer up to an 8.61 per cent functional discount – and if all of the volume could be directed through warehouses, we could offer up to an 11.79 per cent functional discount.

It was important to make an evaluation of this situation because chain, etc., operators desired some kind of a functional discount in order to handle the merchandise to the warehouse. We thus had to determine what kind of a discount we could give them without impairing our profits.

In talking with customers and prospects, it became apparent that we were going to have to offer a functional discount of somewhere between 8 per cent and 12 per cent and more probably in the 12 per cent area, if we wanted to distribute merchandise through warehouses.

Given this set of circumstances, we determined whether or not warehouse distribution would improve benefits. We found that if we could offer an 8 per cent functional discount while selling 50 percent of our merchandise to chain, etc., operators on a warehouse basis, we could improve profits by some $107,000 over the existing base of $350,000. If 80 per cent of the merchandise went through warehouses, we could improve profits by $254,000 and if all of the merchandise went through warehouses, we could improve profits by somewhere in the neighborhood of $1.6 million.

On the other hand, if it was necessary to offer a 12 per cent functional discount, profits would be substantially impaired. As a matter of fact, if 50 per cent of the volume went through warehouses, profits would be impaired by some $87,000.

It thus became painfully obvious that warehouse distribution had certain economic disadvantages. In addition, we had some concern about warehouse distribution because we ran the risk of losing some measure of control over our products. Therefore, a decision was made to discontinue further examination of the warehouse distribution alternative.

We next studied the opportunity to use institutional food distributors to serve selected market segments. As before, the first step was to determine what kind of a functional discount could be offered to institutional distributors without impairing profits. We calculated that a functional discount of 27.11 per cent could be given to institutional distributors if they could maintain existing sales levels.

We next determined if institutional distributors would improve profits. We knew we could offer them a functional discount of 27.11 per cent but we also knew that some problems might develop by using distributors. For example, distributor salesmen would not spend as much time selling our products as our own salesmen would. In addition, we knew that it might be possible that prices would have to be reduced by some 10 per cent to be competitive with one of the national competitors who utilize institutional food distributors extensively throughout the country. Therefore, we calculated the profit improvement opportunities under three varying circumstances. We knew that the institutional distributor would require a 20 per cent functional discount. We found that if institutional food distributors, while working on a 20 per cent gross margin, could maintain existing sales levels, that we could improve overall profitability by some $290,000. On the other hand, if we had to reduce prices by some 10 per cent while maintaining existing unit sales volumes, profit improvement would total about $38,000. Finally, we found that if unit sales declined by some 10 per cent at existing prices, that our profits would be $9,000 less than under the existing system.

After much consideration, it was decided to market test the use of institutional food distributors keeping our fingers crossed that while we offered a 5 percent price reduction, we would not suffer a unit sales decline.

We then decided to evaluate the profit improvement which could be realized as a result of selective selling. That is dropping those low volume, low potential accounts that were generating a loss for the company.

In this system we would continue to serve some of the accounts that were not generating enough volume to cover our variable expenses associated with making a sales and delivery call; but, had the reasonable potential of doing so in the future. In addition, it was necessary, in some cases, to serve selected chain outlets, even though they did not have high potential and were not generating profits for us, in order to maintain our distribution in the balance of the chain's stores. In total, we found an opportunity to improve profitsbysome $400,000 over the existing level of $350,000. Thus, we would be able to increase net profits by some 117 percent in total.

Trade Class 6, the chain operators, were to be served whether or not they were generating a profit.

Importantly it was found that we had an opportunity to improve benefits by $295,000 in Trade Class No. 1, the moms and pops. This trade class was the most significant trade class in terms of profit increase.

In total, it was found that substantial opportunities existing to improve net after tax profit in almost every trade class.

By following selective selling we were suggesting that the company reduce its total sales by 9.2 per cent. This became a rather difficult concept for sales management to understand. Their reaction was, "What, reduce my sales, eliminate some accounts, why, if I don't call on them my competitors will." And of course our reaction to this was, fine, your competitors have about the same cost structure as you have. If you can't make money calling on them, neither can your competitors. Let them go broke, don't you go broke.

What's more, we found that the net profits were running at about 1 per cent of total sales. Thus, for every dollar the company was spending calling on these non-profit accounts, it had to generate sales of $100 somewhere else just in order to break even on the transaction. Since $100 a month accounts were difficult to find, we were able to convince management that selective selling had some merits and that at least a market test of the idea should be undertaken to determine the long-run effects of such a program on the company.

In addition, we learned that it would be possible to hire a "shelf merchandiser" whose responsibility would be to service shelves in the stores. These men could be hired at less cost to the company than the salesmen. It was therefore concluded, that perhaps it would be wise to have a "man to sell and a man to service."

Thus, we asked the question, "Will the use of a shelf merchandiser improve profits and if so, by how much?"

We found as a result of this analysis that if we use a man to sell and a man to service, and none of the other alternative approaches, net profits would reach $570,000 for an improvement of $220,000 or 62.9 per cent.

Because of the profit opportunities available on selective selling and "a man to sell and a man to service," it was decided to combine the alternative approaches to find out what the profit improvement opportunities would be by installing both programs simultaneously. Here it was found that net profits could be increased to $974,000 by employing the use of selective selling and "a man to sell and a man to service." Thus profit improvement opportunities available totaled about $624,000 or 180 per cent increase over existing profit levels.

Thus, a decision was made to install both selective selling and "a man to sell and a man to service" while market testing the alternative of using institutional food distributors to serve selected accounts.

It was necessary to devise a system to control and monitor the new plan. We developed two basic forms for this purpose.

First, it was necessary to develop a form to control the selective selling program. We wanted to measure our progress in seven basic areas giving consideration to six control units. That is, we felt it was important to measure monthly sales compared to preceding month and same month of previous year by account, by territory in total and by trade class and by agency in total and by trade class. Next, we felt it important to review the number of unprofitable accounts on a monthly basis. It was decided that we were going to have to have a rigorous effort in eliminating unprofitable accounts. Therefore, we wanted to take a look at the unprofitable accounts by specific account to find out what had happened to each account over a period of time. Then we wanted to review unprofitable accounts by territory in total and trade class, and by agency in total and trade class.

Next we wanted to examine the number of unprofitable invoices received being mindful of the average break-even order size by trade class. We wanted to do this by account and its total by territory and for the various categories within an agency.

Next, it was important to look at the number of invoices by dollar size. We recognized that certain invoices generated a profit and others did not. We had a desire to increase the size of all the orders if possible.

Therefore the monthly number of invoices by dollar size were reviewed by account, territory, agency and delivery route.

It was then important to take a look at the number of accounts being contacted on a weekly, bi-weekly basis and those receiving shelf service. These activities were reviewed by territory and in total and trade class and by agency in total and trade class.

We next decided to review the number of sales and service calls made on a monthly basis by account, and by territory in total and by trade class and by agency in total and trade class. Finally, management was to review the monthly profit or loss being generated by territory and trade class within a territory, by agency in total and by trade class.

It was felt then that through the effective use of this information, the new selling and delivery activities could be satisfactorily controlled.

We then decided on the control measures required to measure the success of "a man to sell and a man to service" program. Here again seven control factors were measured by six control units. We wanted to periodically examine monthly sales compared to preceding month and same month in the previous year, number of invoices received, number of invoices serviced, dollar volume serviced, monthly profit or loss generated, the number of shelf merchandisers employed.

All of the information was to be available by account, by territory, by accounts serviced and by accounts not serviced and by service territory for those accounts serviced and for those non-serviced. The number of shelf merchandisers employed, was gathered by agency only.

Thus it can be seen that a rather complete system to evaluate progress was developed.

Finally, let's review the quantitative and qualitative techniques used to analyze and control selling and delivery activities in this situation.

First of all, the behavioral sciences were called upon to assist us in evaluating the effectiveness and efficiency of the salesmen's and delivery drivers' activities from a qualitative point of view. This attitude research was one of the first steps undertaken in the project.

Two, the industrial engineering area was called upon to assist in time studying the activities of the salesmen and route delivery drivers.

Third, our financial analysts assisted in allocating costs to salesmen and drivers as well as other cost associated with operaing the business.

Fourth, a statistical analysis was made of the time value versus order size where we determined how many write an order and make a sales call by order size. Next, statistical analysis was again used to rank order the accounts and to evaluate whether the accounts should continue to be served or not. Here we rank ordered accounts according to the number of sales calls to be made — that is, more than once a week, weekly, bi-weekly, etc.

Next, statistical analysis was again used to make a topdown and bottoms-up forecast. That is we made sales projections based upon account elimination, etc. In addition we made some forecasts as to the volume that might reasonably be expected by concentrating more of our efforts on selected key accounts.

Next, account potential measurement was undertaken. For example, in chain grocery stores we determined potential by combining a variety of measurements including the number of square feet in a store (assuming that the store would generate a certain amount of volume per square foot) and determining what percent of that volume would be in our product category. Next, we counted the number of employees in the store, counting a part-time employee as half the value of a full-time employee and applying some factor to determine total store sales. Finally we counted the number of check-out counters being sure we understood which ones operated full-time and which were operated part-time to be able to estimate sales volume in the store.

Using certain studies published by Progressive Grocer, i.e., the Kroger Study, the Thoroughfare Study, etc., we were able to determine how much of a total store's volume was in the products we sold and were therefore able to evaluate account potential.

Next, we used the pay-off consequences approach or decision theory. This was used to determine the profits to be generated by serving selected accounts or discontinuing to service selected accounts, etc.

Again, decision theory was employed to make decision rules. For example, we decided that we would not serve any account that generated less than x number of dollars per month over a prolonged period of time. If some management personnel wanted to continue to serve these accounts we would do so recognizing that within a certain period of time these accounts would have to be built up or eliminated as appropriate.

Finally, we employed another statistical analysis technique called "Control by Exception" where, as you will recall, the control measures used to evaluate the progress being made in selective selling, "a man to sell and a man to service." Here we were going to examine only those accounts not generating a profit for us and make certain decisions as to what to do with these accounts in the future.

In conclusion, it is apparent that many methods exist to quantitatively and qualitatively analyze selling and/or delivery activities. It is also obvious that it is important to analyze selling and delivery activities on a periodic basis. In this case, rather substantial profit improvement opportunities were available. I am sure that similar profit improvement opportunities are available in many of the companies represented here today.

It is not enough to examine selling and delivery activities just once. Continued periodic examinations must be undertaken in light of changing market conditions and circumstances.

Finally, it is important to control selling and delivery activities to optimize profits. Our client had very little control over his selling and delivery activities prior to the analysis.

It is apparent that many salesmen were calling on accounts that should not be contacted or be contacted less frequently. There was no available system to monitor results and it was assumed that the salesmen were sophisticated enough to manage their own territories and in maximizing sales and optimizing profit opportunities.

While what we talked about today was analyzing selling and delivery expenses, I am sure that all of you are astute enough to recognize the fact that similar analytical techniques could be applied to analyzing costs in other physical distribution areas. I think that one of the most significant points that this case study brings home to me is the way in which existing data can be utilized to solve a problem, if the data is analyzed properly. For the "development of a distribution strategy" for one company or one type of operation could be quite different from that for another company or even for a different operation within the same company. The type of cost system could change as the operation changes and becomes more sophisticated or as specific problem areas disappear. For physical distribution cost analysis must be problem oriented to adequately highlight opportunities for improvement and to indicate areas in which costs are significantly out of control or are rising.

I trust that I have given you some insight as to how you might go about "developing a distribution strategy" in your own company.