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A CRITICAL ANALYSIS OF METHODS OF DETERMINATION AND
UTILIZATION OF TERRITORIAL MARKET POTENTIALS

A DISSERTATION

Presented in Partial Fulfillment of the Requirements
for the Degree Doctor of Philosophy in the
Graduate School of the Ohio State
University

By

ROBERT WALTER BAEDER, B.B.A., M.B.A.

*****

The Ohio State University
1961

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March, 1961

Robert Walter Baeder
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CHAPTER I
INTRODUCTION

Information about market potential is important to management for planning, organizing and controlling the firm's marketing activities. Market potential is defined as the total amount of a product which would be sold to customers who are defined as to type and geographic location, in a definite time period, under a given set of market conditions assumed or actual.¹

The importance of determining market potential is generally recognized by business firms. In a survey of 180 firms by the American Management Association, approximately 90 percent reported that they computed market potentials, and over 30 percent indicated that this was one of their most important marketing research activities.² A recent study by the American Marketing Association substantiates these findings and further indicates that the development of market potentials is significant to both industrial and consumer goods companies. This study shows that of 477 firms with marketing research departments, 90 percent of the consumer goods manufacturers and 88 percent of the industrial goods manufacturers computed market potentials.³

¹ See Chapter II for a more complete definition.
The value of market potential information as a management tool is illustrated by listing some of its more important uses for planning and control purposes:

1. To determine territorial sales effectiveness
2. To determine advertising effort
3. To determine sales effectiveness with customer groups
4. To plan company products
5. To determine territorial sales potentials and sales quotas
6. To realign sales territories and allocate sales manpower
7. To forecast sales
8. To determine plant and warehouse locations
9. To determine over-all company sales effectiveness

Thus, these uses cover the full range of company marketing activities and are significant in helping to improve marketing performance.

Statement of the Problem

The principal problem in this study is to appraise critically the methods of determination and utilization of territorial market potentials. A territorial market potential is defined as the potential for one of a number of geographic territories which make up a given total geographic market. An additional problem considered before attaching the principal problem is the clarification of the definition of market potential.
The need for improved practice in determining territorial market potentials is indicated by the American Management Association's survey of business firms in which the determination of market potential was named by 47 of 125 respondents as the area with the greatest need for improvement.\textsuperscript{4} The absence of critical appraisals is one of the major problems confronting researchers who are attempting to determine territorial market potentials. These individuals have little to guide them in the selection and use of methods since industry practices are not discussed adequately in the literature. Several books and articles describe particular approaches, but the critical comments are usually favorable or else none are given. One statistical study has been made which indicates the various procedures used by business firms to compute industrial market potentials; however, primary emphasis is placed on methodology rather than on a critical appraisal.\textsuperscript{5} Most marketing research and sales management textbooks present techniques, but their evaluation is usually limited to a general discussion of the advantages and disadvantages. Thus, a definite need exists for critical appraisals of these methods.

Researchers lack practical knowledge of the uses of territorial market potentials. Some publications discuss possible uses

\textsuperscript{4} Crisp, \textit{op. cit.}, pp. 33-34

but do not reveal what is done in practice. Other publications describe the way these data were used to solve particular problems, but they do not indicate whether these uses are general practice or whether the results were satisfactory over a period of time. A requirement exists for practical information on the uses of territorial market potentials for marketing planning and control.

Variations in definition and terminology in the field of market potential are a constant problem and source of confusion to researchers. In defining it, some writers speak of what the firm can expect to sell; others refer to total industry sales of the product; and still others advocate a concept which is broader than industry sales. Authors often use different terms to refer to substantially the same concept. One author may speak of "market potential;" another may use the term "sales potential;" while still others may refer to "sales expectancy." Thus a clarification of the definition is necessary before attaching the principal problem.

**Purposes of the Study**

The primary purpose of this study is to augment the knowledge of methods of determining territorial market potentials by presenting and critically appraising the methods used by industry. Supplementary purposes are to provide practical information on the uses of territorial market potentials by studying industry practices and to promote a more complete understanding of the field of market potential by clarifying the definition. The accomplishment of the primary purpose should result in the development of better methods
and in improved applications of the various methods by industry researchers. The achievement of the supplementary purposes should lead to the more effective use of these data for marketing planning and control. It is hoped that through this study marketing researchers will be able to provide better market potential information from which management can make more effective decisions and thus benefit society by increasing the efficiency of the marketing system.

Scope of the Study

The major sections of this study dealing with methods of determination and utilization of market potentials are limited in scope to territorial market potential. The two other types of market potentials, namely, product and customer group, are discussed briefly in Chapter II.

A second limitation on the scope of the study is that the chapters dealing with methods of determination and utilization are restricted to developed market potential. Developed market potential, which is one of two categories, is defined broadly as the total industry sales of a product in a given time period. Undeveloped market potential, the other category, is considered briefly in explaining the definition of market potential.

Territorial developed market potential is emphasized in this study because it is the major category and type of potential computed and utilized by industry. Also, it usually presents more complex problems of determination and application than do customer group or product market potentials. Thus by limiting the scope
of the investigation in this manner, a more complete study of the most important problem area can be made.

Methods of Obtaining Data

Several methods were employed in conducting this investigation. First, an extensive research of the literature was made. Marketing research and sales management texts, periodical articles, conference proceedings, and research reports were reviewed for data on market potential. This library research provided general background material on methods of determination and uses of market potentials, as well as a few case histories.

The bulk of the data for this study was obtained by a survey of the practices of forty business firms which were following an effective program of determining and utilizing territorial market potentials. Twelve of the firms were in the consumer goods business, sixteen in industrial goods business and twelve in both businesses. Fifty-four individuals representing various divisions of these firms were contacted for information. A list of the firms and the individuals contacted is found in the Appendix.

The firms included in the survey were selected in several ways. Many of the companies were mentioned prominently in the literature. Suggestions were also obtained from research organizations, such as the American Management Association, and from individual researchers who have done work in the field of market potential. These individuals and organizations were also helpful
in providing background material and in clarifying certain points that arose in the course of the investigation. A list of these organizations and individuals is also found in the Appendix.

In selecting companies for survey, emphasis was placed on obtaining quality case material rather than on a vast quantity of data. No attempt was made to secure a representative sample of firms in one industry or a representative cross section of all industries, but the firms surveyed do represent several industries. Most of the firms studied are relatively large in size and occupy leading positions in their industries. Several case histories of each principal method of determining territorial market potentials were secured.

Data for this study were obtained principally by personal interviews, although some information was collected by personal letters. The firms studied were cooperative in supplying their own data and in suggesting other sources and general methods of analysis. The personal interviews or conferences averaged about two hours in length. Most of the illustrative case material is not identified with any specific firm for reasons of industrial security; however, this procedure should not detract from the value of the case material as examples of industry practices.

Plan of the Study

The study is divided into four principal parts. The first part, Chapter II, deals with the meaning of market potential, common terminology, categories and types of market potentials,
and relationships with other marketing fields. This part of the study provides a framework for the succeeding discussion of territorial market potentials.

The second part of the study, Chapter III, indicates how business firms are utilizing territorial market potentials for planning and control purposes. Major uses of this information are discussed in detail. The measurements computed and the specific management reports prepared are explained and illustrated. Case examples of the applications of these data to current problems and the actual results obtained are presented whenever they serve to illustrate good usage.

Part three of the study, Chapters IV through VII, is concerned with a critical appraisal of the methods of determining territorial market potentials. First, several items that must be considered before attempting to make any computations, such as the choice of geographic units and sources of economic data, are discussed. Second, the basic methods are presented and explained. Third, each technique is appraised from the standpoint of its usefulness in providing accurate market potential information. Fourth, the importance of verifying the method used is discussed, and techniques of verification employed by industry are presented and analyzed. Fifth, actual case studies drawn from industry are cited to illustrate the application, advantages or shortcomings of each method.
In the fourth part of the study, Chapter VIII, the first three parts are summarized, appropriate conclusions are drawn, and recommendations for improvements in practice are made.
CHAPTER II

THE MEANING OF MARKET POTENTIAL

The variations in definition and terminology used in discussing market potential are a constant problem and source of confusion to researchers. Thus, before beginning a study of methods of determining territorial market potential, it is important to define the term market potential clearly. This Chapter is concerned with an explanation of the meaning of market potential and its relationship to sales potential, forecasting, sales quotas and economic demand. A brief section is also devoted to methods of determining market potential and types of market potential analysis which may be undertaken.

Definitions of Market Potential

Two basic definitions of market potential are found in the literature of marketing. The most popular definition considers it to be the total sales of a product made by an industry in a given time period. The Committee on Definitions of the American Marketing Association, for example, defines market potential as "the expected sales of a commodity, a group of commodities, or a service for an entire industry in a market during a stated period."\(^1\) Lyndon O. Brown offers a similar definition. He defines it as "an estimate of the capacity of any given market to absorb a commodity in the light of the general limitations of its

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past behavior."2 Luck and Wales, two other prominent marketing writers, define market potential as "realizable sales, a quantitative statement of the opportunities for the product, or the sum total of actual sales of all the companies that make and sell it."3

The second definition found in the literature of marketing considers market potential to be the total sales of the product made by the industry in a given time period plus those theoretical sales which would have been made if the industry had developed the market fully. The National Industrial Conference Board, for instance, defines potential as the total demand for a product. The Board states that the total sales of all the companies making the product may be the potential, but in most cases it is greater than actual sales because of short supply or the industry's failure to develop the market fully.4 Thus, the Board recognizes both a developed and an undeveloped market in its definition.

Richard Crisp also recognizes the existence of an undeveloped market. He points out that the computation of market

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potential is quite different for new and old types of products.\textsuperscript{5}
For an old product one measures primarily what was consumed; whereas, for a new product one measures what theoretically could be consumed.

Each of the above definitions can be appropriate for the solution of specific marketing problems. At times one may wish to use the industry sales definition in solving a problem. In other cases one may wish to consider the theoretical market over and above industry sales. And in still other instances one may desire to use both of these approaches. The problem remains that no single definition found in the literature offers a satisfactory over-all explanation of these various concepts of market potential.

The literature definitions also tend to overlook certain questions that must be answered if one is to undertake the computation of market potential. For instance, many of the definitions found in the literature do not indicate the time period used, the territories covered, or the customers included. These factors must be made known if the statement of market potential is to be meaningful. An attempt is made in the following section to develop a definition which brings these various elements into clear focus.

**Study Definition of Market Potential**

Market potential is defined in this study as the total amount of a product which would be sold to customers who are defined as

to type and geographic location, in a definite time period, under a given set of market conditions, assumed or actual. The market conditions normally relate to such factors as price, advertising, customer knowledge, sales promotion, product features and distribution. The actual market conditions existing in a given time period may be used in computing market potential or one may assume a variation from actual conditions in one or several market factors depending upon the type of analysis being undertaken.

For instance, in studying the market potential for electric toasters, the actual 1959 market conditions in the United States could be used or a lower industry price level and a greater amount of industry advertising might be assumed. Researchers sometimes compute the market potential for a product under several different sets of market conditions to determine how variations in certain market factors affect it. Thus, market potential should not be viewed as a single figure, but rather as a schedule of the amounts of the product which would be purchased under various market conditions.

Market potentials are computed in dollars, product units, or in relative percentages of the total market potential. The dollar is a very popular unit, especially where several different types and sizes of products are involved. The advantage of the dollar unit is that it reduces various types of data to a common denominator which makes market analysis much easier. Product units are
used where a single product or a relatively small number of products is being studied. For instance, one industrial firm computed market potentials in bags, and an insurance company determined market potentials in insurance policies written. One advantage of the product unit is that the analyst does not have to adjust the data for price changes that may occur in different territories or in various years. Some firms determine territorial market potentials in relative percentages of the total market potential, e.g., Chicago is 6.2 percent of the total market potential, and New York is 7.4 percent. The advantage of this method of expression is that the size of each territorial market relative to the total market is indicated. Thus, several different units are used for the computation of market potentials. The selection of units for a particular firm or market must be determined individually, depending upon the specific factors involved.

Market potential is divided into two categories, developed and undeveloped, for analysis purposes. Developed market potential is the total industry sales of the product in the time period being considered. Undeveloped market potential is the difference, if any, between market potential and developed market potential. Undeveloped market potential indicates what additional sales of the product can be made by varying certain market conditions. Under certain assumed market conditions, the market potential may be less than the developed market potential, in which case the undeveloped market potential is a negative figure.
The above concepts are best illustrated by the use of a hypothetical example. The developed market potential for product X in the United States in 1959 was 600 units. Under an assumed set of market conditions, the market potential was estimated at 1,000 units and the undeveloped market potential at 400 units, meaning that 400 more units would be sold under these conditions than under the actual 1959 conditions. Under a second set of assumed market conditions, the market potential was estimated at 1,300 units and the undeveloped market potential at 700 units. Under a third set of assumed market conditions, the market potential was estimated at 500 units and the undeveloped market potential at minus 100 units, indicating the 100 less units would be sold under these conditions than under actual 1959 conditions. The developed market potential is then a constant in any time period, while the undeveloped market potential varies with the assumed market conditions and probably with the analyst making the computations. The above data are shown in tabular form in Figure 1.

The study definition of market potential is a composite of the ideas expressed in the two basic definitions found in the marketing literature. However, it provides a more complete explanation of the various factors which must be considered in determining market potential. For instance, the study definition requires that the market conditions being used be stated clearly.
FIGURE 1

MARKET POTENTIAL FOR PRODUCT X IN THE UNITED STATES
UNDER VARYING MARKET CONDITIONS, 1959

<table>
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<tr>
<th>Statement of Market Conditions</th>
<th>Actual 1959 Market Conditions</th>
<th>Assumed Market Conditions #1</th>
<th>Assumed Market Conditions #2</th>
<th>Assumed Market Conditions #3</th>
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<tr>
<td>Developed Market Potential (Units)</td>
<td>600</td>
<td>600</td>
<td>600</td>
<td>600</td>
</tr>
<tr>
<td>Undeveloped Market Potential (units)</td>
<td>0</td>
<td>400</td>
<td>700</td>
<td>-100</td>
</tr>
<tr>
<td>Total Market Potential (Units)</td>
<td>600</td>
<td>1,000</td>
<td>1,300</td>
<td>500</td>
</tr>
</tbody>
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Source: Data are fictitious.
Many of the literature definitions ignore this point. They define market potential as the maximum amount of the product which could be sold, without any reference to the market conditions being used. It is difficult to see how a given market potential can be meaningful without an accompanying statement of the market conditions used in its computation.

It is also believed that the use of the two categories of market potential, developed and undeveloped, within the framework of a single definition contributes to a better understanding of these two concepts and also provides a more workable definition for researchers. For instance, with the study definition one can consider developed market potential and undeveloped market potential individually, or in combination, without having to resort to separate and lengthy definitions.

Sales Potential and Sales Quotas

Sales potential is normally defined by marketing writers as the amount of business which the individual firm can expect to obtain in any time period. Alexander, Cross and Cunningham, for example, define sales potential as the total amount of a product which an individual company can expect to sell. Willard Fox uses the term "normal sales expectancy" rather than sales potential. Fox defines normal sales expectancy as "the volume of sales that would be produced by an average salesman of a specific sales

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organization under the supervision of an average branch manager.\footnote{Willard Fox, \textit{How to Use Market Research for Profit} (New York: Prentice Hall, Inc., 1950), p. 74.}

Sales potential as defined by these writers undoubtedly contributes to the solution of specific sales problems. However, it is believed that a definition of sales potential which relates the concepts of developed and undeveloped market potential to the individual firm would be useful.

The term sales potential used in this study applies to the individual firm. A firm's sales potential is that portion of the market potential for the types of products sold by the firm which the firm believes that it can obtain. As with market potential, one must specify the products, customer groups, geographic areas, the time period and the market conditions in order to offer a meaningful statement of sales potential.

Sales potential is also divided into developed and undeveloped for analytical purposes. Developed sales potential is that portion of the developed market potential for the products sold by the firm which the firm believes that it can obtain. Undeveloped sales potential is that portion of the undeveloped market potential for the firm's products which the firm believes that it can secure.

The determination of sales potential is largely an individual matter since it is closely related to the individual firm's business
and market objectives. For instance, one company decided that one of its objectives was to be the market leader. It was determined that the market leader normally secured about 25 percent of the developed market potential. The firm's developed sales potential was then set at 25 percent of the developed market potential. Thus, it is important for the researcher to determine the firm's specific business and market objectives and their reasonableness before attempting to compute sales potential.

The relationship between sales quotas, sales potential and company sales should also be clarified. Many firms compute sales quotas for the coming year. A sales quota is defined as a sales goal assigned to a marketing unit for use in the management of sales effort. The sales quota may be set at a higher, lower, or the same level as the forecasts of developed sales potential or company sales depending upon the wishes of the individual firm. General Electric's control department, for instance, set its 1960 sales quotas at the same level as its forecast of developed sales potential. Crane Company, on the other hand, sets its sales quotas at a level somewhere between its forecasts of developed sales potential and company sales. Thus, a sales quota is a management device used by the firm, and its relationship, if any, to sales potential or sales depends upon individual practice.

A further explanation of the relationship between market potential, sales potential and sales quotas is in order. This is best accomplished by applying these concepts to one industry and one firm in that industry. The electric motor control industry and General Electric's control department are used for this illustration.

The developed market potential (all customers) for electric motor control in the United States in 1959 was estimated at $400 million. General Electric believed that its developed sales potential was 20 percent of the developed market potential, or $80 million. The sales quota for 1959 was set at the same level as developed sales potential, $80 million. The market potential for motor control in 1959, assuming 1959 market conditions except broader electrification in certain states, an increased industry advertising program, and increased automation in several key industries, was estimated by General Electric at $430 million. The undeveloped market potential under these conditions was $30 million. Based on an analysis of its strengths and weaknesses in the undeveloped market, General Electric estimated its undeveloped sales potential at 30 percent of the undeveloped market potential, or $9 million. Under a different set of assumed market conditions the undeveloped market potential was estimated at $40 million and General Electric's undeveloped sales potential at $10 million.
The computation of developed market potential and General Electric's developed sales potential for 1959 provided a basis for evaluating current sales objectives. The determination of the undeveloped market potential and General Electric's undeveloped sales potential under several sets of assumed market conditions for the year 1959 provided significant data for evaluating General Electric's best course of action with regard to market development activities.

**Forecasting and Determining Market Potential**

The relationship between determining and forecasting market potential should also be explained because misunderstandings frequently arise regarding these terms. Market potential is determined for past time periods and forecasted for future time periods. The same basic methods are used when market conditions are assumed. The conditions could be assumed for 1959 or 1965. There is a basic difference, however, between determining and forecasting developed market potential. In determining it, the market conditions are known since a past time period is used, while in forecasting it the market conditions are unknown and must be forecast. Thus, an additional source of error, the forecast of market conditions, is present in forecasting developed market potential.

**Market Potential and Economic Demand**

Writers on economics do not define or discuss market potential; however, it is related to the concept of economic demand. The
classical concept of demand focuses special attention on the price of the product. Demand is thought of as a schedule of the amounts of the product that would be sold at various prices in a given place on a given date. Classical economists are aware that price is not the sole factor determining sales and that changes in other conditions can have important effects on sales; however, for analysis purposes these other conditions are held constant and attention is directed toward the relation of price to sales. The effect of changes in other conditions is viewed as a shift in the demand schedule, meaning that different quantities are sold at each price because of changes in other conditions.

Several economics writers discuss a type of demand analysis which is broader than the classical concept. These economists study the relation of sales to price and many other independent factors. It is impossible to determine all of the factors which may be considered in this type of analysis, but the most important ones are price, market development, business activity and product improvement. The demand for a product under this concept is roughly equivalent to the market potential of the product as it is defined in this study.

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9. This type of analysis is discussed in a number of economics books. For example, see Joel Dean, "Demand Analysis," Managerial Economics (Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1951), pp. 141-246.
Computation of Market and Sales Potential

The developed market potential in the United States for most products is available in published form from some governmental agency or trade association. The National Machine Tool Builders Association, for instance, publishes the developed market potential of machine tools on a monthly basis.

On the other hand, the market potential for a product under assumed market conditions is not available in published form and must be computed. This is normally accomplished by a market survey or a judgment analysis of the market. The survey method requires the survey of groups of prospective purchasers to determine what would be purchased under a given set of conditions. The results of these sample surveys are then extended to the universe to determine the market potential. The Monsanto Chemical Company used this approach in determining the market potential for a wood preservative under various price conditions. Prospective customers were surveyed to determine where this product could be utilized and how many units would be purchased at various price levels. The survey results were extended to the universe to determine the market potential for this product at the various price levels. Monsanto utilized these data in conjunction with available competitive information to evaluate its undeveloped sales potential for this product.

The judgment method of determining market potential calls for a deductive analysis of the market situation to determine how many
units of the product would be sold under a given set of market conditions. Individual judgment is the most important factor in this type of analysis and it is probable that different researchers studying the same product would make different assumptions and thus arrive at different estimates of market potential.

An example of the judgment method is General Electric's computation of the market potential for an electrical device used primarily for oil well pumping. The developed market potential in 1959 in the United States was 10,600 units. Approximately 30,000 oil wells went on pump in 1959 and it was estimated that 70 percent of these wells could have been served electrically if the product had been promoted fully by the industry. Total market potential under this assumption was 21,000 units. Developed market potential was 10,600 units, and undeveloped market potential 10,400 units. General Electric's developed sales potential in 1959 for the product was 20 percent of the developed market potential. Based on an analysis of the undeveloped areas, it was estimated that General Electric's undeveloped sales potential was 10 percent of the undeveloped market potential. This information was used in determining to what extent General Electric should participate in industry advertising programs aimed at the promotion of oil field electrification.

The experimental approach is sometimes used to assist in the judgment analysis of the market. This approach is customarily
limited to the activities of one firm; therefore, the researcher must use judgment in interpreting the results in terms of the total market. This technique was used by one firm to evaluate the effect of certain display material on the sale of casters in retail stores. The increase in sales of the casters in a group of stores using the display material was compared with the increase in sales in a similar group of stores not using it. A greater percentage increase was found in the stores using the display material. The analyst then used these data to assist in determining the possible effects of the use of this type of display material by the industry on the market potential for casters.

Analysis of Market and Sales Potential

Market and sales potentials are customarily analyzed by products, customer groups and geographic territories. These analyses are made for developed and undeveloped market and sales potentials.

Product analysis is made to determine the relative importance of the various products sold by a given industry or firm. To illustrate, the National Electrical Manufacturers Association divides the market potential for electric motor control into the following four product groups for analysis purposes: (1) magnetic devices, (2) manual devices, (3) compensators, and (4) pilot devices. A small appliance manufacturer uses the following product groups: (1) toasters, (2) coffee makers, (3) irons, (4) frying pans, and (5) mixers.
Customer group analysis is made to determine the relative importance of the various customer groups purchasing a given product or purchasing from a given firm. General Electric's control department, for instance, recognizes four basic customer groups: (1) electrical contractors, (2) mechanical contractors, (3) industrial purchasers, and (4) original equipment manufacturers. A consumer goods manufacturer uses three customer groups for analysis purposes: (1) department stores, (2) hardware stores, and (3) other retail stores.

Territorial analysis is useful in determining the relative importance of various trading areas or sales territories. The market potential for electric motor control is analyzed for 123 industrial trading areas by the National Electrical Manufacturers Association. A large consumer goods manufacturer analyzes the sales potential for its products for approximately 150 consumer trading areas.

Thus, market and sales potentials are normally analyzed by product, customer group, territory and combinations of these categories. Territorial analysis is the primary subject of this study, and methods of determination and utilization of territorial market potentials are discussed in detail in the following chapters.

Conclusions

The variations in definition and terminology used in discussing market potential are a constant problem and source of
confusion to researchers. In this Chapter the meaning of market potential has been explained and a definition offered which brings the various elements involved into clear focus. It is recognized that the definition used in a particular study depends upon the type of analysis being undertaken. The important point is that the researcher formulate or adopt a complete definition and then state clearly what definition is being used. If this is not done the resultant information is limited in value to the user. It is hoped that this study will lead to a better understanding of the meaning of market potential and to an appreciation by researchers of the need for greater emphasis on definition.
CHAPTER III
USES OF TERRITORIAL MARKET POTENTIALS

The most accurate and up-to-date market potentials by territory are of little value unless they are utilized effectively for management planning and control purposes. Market potentials are used to measure territorial market position, determine sales potentials by territory, determine sales quotas, analyze territorial customer coverage, allocate sales manpower, realign sales territories and allocate regional advertising appropriations. The plan of this Chapter is to discuss, illustrate and evaluate these various uses.

Chapters III through VII of this study are limited to developed market potential. In the interest of brevity and to improve the readability of the study, the term "market potential" is normally substituted for "developed market potential" in these Chapters. The term "developed market potential" is still used in instances where particular emphasis is desired.

Measurement of Territorial Market Position

One of the most important uses of market potentials by territory is to measure market position. This measurement is highly significant to business firms because they must know their relative position in various territories if they are to control marketing operations effectively and plan for future improvements.

The measurement of territorial market position may be accomplished in several different ways. The most popular method is to measure
the firm's percentage of attainment of the market potential in each area and then to compare these percentages with other areas and with past performance in the same area. General Electric's control department used this approach in measuring the market position of each of its sales districts. A sales control report (Figure 2) was prepared for each district showing developed market potential, sales, current market position and market position in the previous year for each trading area in the district. Each trading area was numbered according to the size of its market potential relative to the other trading areas in the United States. For instance, St. Louis, Number 10, was the tenth largest trading area in the United States.

The following general performance standards were established on the basis of the average performance in all areas: Less than 11 percent of the market potential, very poor; 11 percent - 18 percent, fair; 19 percent - 25 percent, average; and over 25 percent, above par. These standards were used by management as a general guide to determine which territories were above or below par in sales performance. The reports were compiled early in the year for the preceding year and were employed by management throughout the year as control and planning guides.

A second method of measuring territorial market position is through the use of an index, which is computed by dividing the percentage of the firm's total sales in each area by the percentage of the total market potential in the area. For example, if New
### FIGURE 2

**GENERAL ELECTRIC COMPANY**

**MID-STATES DISTRICT CONTROL REPORT**

**1956**

<table>
<thead>
<tr>
<th>No.</th>
<th>Trading Area</th>
<th>Developed Market</th>
<th>Potential $000</th>
<th>1956 Sales $000</th>
<th>Percent Secured</th>
<th>1955 Percent Secured</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>St. Louis, Mo.</td>
<td>2,850</td>
<td>517</td>
<td>18</td>
<td>17</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Kansas City, Mo.</td>
<td>2,500</td>
<td>202</td>
<td>8</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>40</td>
<td>Wichita, Kan.</td>
<td>710</td>
<td>125</td>
<td>19</td>
<td>19</td>
<td></td>
</tr>
<tr>
<td>60</td>
<td>Memphis, Tenn.</td>
<td>625</td>
<td>195</td>
<td>32</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>65</td>
<td>Omaha, Neb.</td>
<td>542</td>
<td>81</td>
<td>15</td>
<td>17</td>
<td></td>
</tr>
<tr>
<td>81</td>
<td>Little Rock, Ark.</td>
<td>485</td>
<td>93</td>
<td>19</td>
<td>18</td>
<td></td>
</tr>
<tr>
<td>110</td>
<td>Topeka, Kan.</td>
<td>330</td>
<td>31</td>
<td>9</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>137</td>
<td>Decatur, Ill.</td>
<td>274</td>
<td>15</td>
<td>6</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>138</td>
<td>Joplin, Mo.</td>
<td>265</td>
<td>35</td>
<td>13</td>
<td>13</td>
<td></td>
</tr>
<tr>
<td>150</td>
<td>Jackson, Tenn.</td>
<td>205</td>
<td>58</td>
<td>28</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>181</td>
<td>Springfield, Ill.</td>
<td>151</td>
<td>10</td>
<td>7</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>185</td>
<td>Lincoln, Neb.</td>
<td>138</td>
<td>33</td>
<td>24</td>
<td>23</td>
<td></td>
</tr>
<tr>
<td>202</td>
<td>Danville, Ill.</td>
<td>91</td>
<td>2</td>
<td>2</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>240</td>
<td>Jefferson, City, Mo.</td>
<td>75</td>
<td>20</td>
<td>27</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>245</td>
<td>Champaign, Ill.</td>
<td>74</td>
<td>5</td>
<td>7</td>
<td>4</td>
<td></td>
</tr>
</tbody>
</table>

**District Total**  

9,315  

1,422  

16  

16

*Source: Data are fictitious*
York accounts for 6 percent of total sales and 5.5 percent of total market potential, its index is 111, which means that performance in the area is above average. On the other hand, if Chicago accounts for 4.2 percent of total sales and 5.1 percent of total market potential, its index is 82, which means that performance in the area is below average. A range of performance is generally established which is considered average. All areas above this range are above par, while all areas below this range are below par. For instance, one company using this system considered areas with an index of between 80 and 120 as average. All other areas were regarded as above or below par depending upon their specific index values.

The method employed by one consumer goods firm illustrates the above approach. This company prepared a report (Figure 3), which showed the percentage of total market potential, the percentage of total sales, the effectiveness index, and last year's effectiveness index for each of its territories. Areas with an index of between 90 and 110 were considered average. Special analyses were made of all areas with a rating of below 90 to determine reasons for this poor performance. Trends in performance were also observed, and those areas which showed downward trends were pinpointed for detailed market analysis.

The majority of the companies studied used one of the above methods of measurement. Most of the firms surveyed also indicated that the measurement of market position is their most important use of territorial market potentials.
## TERRITORIAL SALES EFFECTIVENESS REPORT

### 1956

<table>
<thead>
<tr>
<th>Trading Area</th>
<th>Developed % of Total Potential</th>
<th>Total % of Sales</th>
<th>1956 Effectiveness</th>
<th>1955 Effectiveness</th>
</tr>
</thead>
<tbody>
<tr>
<td>New York</td>
<td>17.2</td>
<td>15.0</td>
<td>87</td>
<td>93</td>
</tr>
<tr>
<td>Chicago</td>
<td>13.5</td>
<td>15.7</td>
<td>116</td>
<td>110</td>
</tr>
<tr>
<td>Los Angeles</td>
<td>11.2</td>
<td>10.0</td>
<td>89</td>
<td>93</td>
</tr>
<tr>
<td>Philadelphia</td>
<td>10.7</td>
<td>11.5</td>
<td>107</td>
<td>99</td>
</tr>
<tr>
<td>Detroit</td>
<td>10.0</td>
<td>10.0</td>
<td>100</td>
<td>102</td>
</tr>
<tr>
<td>Cleveland</td>
<td>9.3</td>
<td>9.6</td>
<td>103</td>
<td>101</td>
</tr>
<tr>
<td>Boston</td>
<td>8.6</td>
<td>7.4</td>
<td>86</td>
<td>90</td>
</tr>
<tr>
<td>St. Louis</td>
<td>7.5</td>
<td>8.5</td>
<td>113</td>
<td>101</td>
</tr>
<tr>
<td>Pittsbrugh</td>
<td>6.4</td>
<td>6.5</td>
<td>102</td>
<td>110</td>
</tr>
<tr>
<td>San Francisco</td>
<td>5.6</td>
<td>5.8</td>
<td>104</td>
<td>106</td>
</tr>
<tr>
<td><strong>Company Total</strong></td>
<td><strong>100.0</strong></td>
<td><strong>100.0</strong></td>
<td><strong>XXX</strong></td>
<td><strong>XXX</strong></td>
</tr>
</tbody>
</table>

Source: Data and Company name are fictitious.
One industrial firm made an interesting analysis using territorial market position data. This company correlated net profit as a percentage of sales for each of its thirty sales districts with the percentage of the market potential secured. A correlation coefficient of .75 was obtained indicating that the profit earned by a district is closely related to its position in the market. This finding revealed to the firm's management the necessity of achieving an acceptable market share in each of its sales districts.

**Determination of Sales Potentials by Territory**

Two approaches are used to compute sales potentials by territory. The first method assumes that the firm should obtain the same percentage of the market potential in each geographic area. Once this figure is determined it is a simple matter to derive the desired data by applying this percentage to the market potential for each area.

An industrial goods manufacturer used this technique in establishing sales potentials for 10 large regional trading areas. The firm's objective was to obtain 20 percent of the market potential in each area. A "sales analysis report" (Figure 4) was prepared, showing the market potential, sales potential, company sales and sales deficit, if any, for each of these regions. The chief advantage of this approach according to the firm was that a definite sales quota was established for each sub-par area. This was helpful in planning sales programs.
FIGURE 4

CRANE COMPANY

SALES ANALYSIS REPORT

1956

<table>
<thead>
<tr>
<th>Trading Area</th>
<th>Market 1956</th>
<th>Potential Sales 1956</th>
<th>Potential Sales 1956*</th>
<th>Deficit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Detroit</td>
<td>5,240</td>
<td>1,470</td>
<td>1,048</td>
<td>---</td>
</tr>
<tr>
<td>New York</td>
<td>4,860</td>
<td>452</td>
<td>972</td>
<td>520</td>
</tr>
<tr>
<td>Los Angeles</td>
<td>4,550</td>
<td>655</td>
<td>910</td>
<td>265</td>
</tr>
<tr>
<td>Philadelphia</td>
<td>3,860</td>
<td>815</td>
<td>772</td>
<td>---</td>
</tr>
<tr>
<td>Cleveland</td>
<td>3,610</td>
<td>548</td>
<td>722</td>
<td>174</td>
</tr>
<tr>
<td>Chicago</td>
<td>3,590</td>
<td>725</td>
<td>718</td>
<td>---</td>
</tr>
<tr>
<td>St. Louis</td>
<td>3,570</td>
<td>578</td>
<td>714</td>
<td>146</td>
</tr>
<tr>
<td>Boston</td>
<td>2,990</td>
<td>704</td>
<td>598</td>
<td>---</td>
</tr>
<tr>
<td>Pittsbrugh</td>
<td>2,860</td>
<td>510</td>
<td>572</td>
<td>62</td>
</tr>
<tr>
<td>San Francisco</td>
<td>2,510</td>
<td>480</td>
<td>502</td>
<td>22</td>
</tr>
<tr>
<td>Company Total</td>
<td>37,640</td>
<td>6,937</td>
<td>7,528</td>
<td>1,189</td>
</tr>
</tbody>
</table>

*Column 3 is 20% of column 1.

Source: Data are fictitious.
The second method of determining territorial sales potentials is based on the assumption that the firm should obtain a different percentage of the market potential in different types of areas. The General Electric Supply Company, for instance, established that its sales potential in each trading area was that percentage of the market potential which would normally be required to attain market leadership in that type of trading area. It was determined that the percentage of the market potential obtained by the market leader in various trading areas was directly related to the number of competitors in the area. The analyst established five classes of geographic markets based on the number of competitors. The average percentage of the market potential obtained by the market leader in each class of market was also established. These are as follows:

<table>
<thead>
<tr>
<th>Class of Market</th>
<th>Number of Competitors</th>
<th>Average % of Market Potential obtained by the Market Leader</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Over 45</td>
<td>8</td>
</tr>
<tr>
<td>B</td>
<td>25 - 45</td>
<td>13</td>
</tr>
<tr>
<td>C</td>
<td>15 - 24</td>
<td>15</td>
</tr>
<tr>
<td>D</td>
<td>10 - 14</td>
<td>17</td>
</tr>
<tr>
<td>E</td>
<td>1 - 9</td>
<td>19</td>
</tr>
</tbody>
</table>

The sales potential for each trading area was computed by determining the number of competitors in the area and applying the appropriate multiplier from the above table to the market potential
for the area. To illustrate, in the Cleveland, Ohio, trading area which has 29 competitors, General Electric Supply Company has a sales potential of 13 percent of the Cleveland, Ohio market potential. This technique was received enthusiastically by the firm's field sales personnel.

Approximately half of the firm's included in this study determined sales potentials by territory. The method used by the majority of these companies was to apply a constant percentage multiplier to the territorial market potentials.

**Determination of Sales Quotas**

Territorial sales quotas are set by many firms to provide sales goals for their regional sales managers and also to provide a means for the firm to measure territorial progress toward the accomplishment of the sales forecast. They are also sometimes used as the basis for compensating salesmen and to evaluate salesmen's performance. Market and sales potentials are usually employed as two factors in their determination.

The usual procedure in establishing territorial sales quotas is to obtain a forecast of company sales for a prescribed future time period and then to allocate this total forecast to territorial units on the basis of various factors which normally include past territorial market and sales potential. In some cases, the sales forecast is increased by an arbitrary amount before it is allocated to territorial units so that the sum of the individual
quotas is greater than actual expected sales. The territorial
sales, as they are made, are then measured against the territorial
quotas, and a percentage of attainment is computed.

Several case histories are presented to illustrate various
procedures used in quota determination. A consumer goods firm
computed sales quotas based on past sales weighted 66 2/3 percent and
past developed sales potential weighted 33 1/3 percent. In another
company they are based on past territorial market potential, past
territorial sales, and number of competitive salesmen in each
territory -- each factor receiving an equal weight in the computa-
tions. The sales forecast was increased by 10 percent before it
was allocated to territorial units on the basis of these factors.
A firm in the industrial goods business computed territorial quotas
based on developed market potential and the number of years the
firm had been selling in the market. This company was expanding its
territorial operations rapidly, and it did not expect as great a
penetration in the new areas as in the well-established territories.
In a third firm, they were determined on a judgment basis by
the sales manager after he had studied such factors as past sales,
sales potential, and the amount of competition.

The firms included in this study generally computed terri-
torial sales quotas, and they usually employed market and sales
potentials as two of the many factors in the computation procedure.
They were normally used to determine the firm's territorial progress
toward the attainment of the over-all sales budget and to indicate to the regional sales managers what sales were expected from the regions in a given year.

The majority of the firms surveyed did not use sales quotas as the basis for compensating salesmen or for measuring salesmen's performance because they believed that they were not accurate enough for this purpose. However, several firms used them as the basis for compensating salesmen. The customary procedure was to pay the salesman a base salary plus a commission based on his realization of the quota. The plans varied considerably; however, under most plans commission payments begin when some fixed point below 100 percent realization of quota is reached and continue until some fixed point above 100 percent realization is attained. For instance, one firm started paying commission when the salesman reached 80 percent of quota and continued paying it until the salesman reached 160 percent. At this point further payments were negotiated.

**Analysis of Territorial Customer Coverage**

Market potentials by territory are also used in the analysis of territorial customer coverage. This type of study is especially important to industrial firms because they normally have direct contact with customers and are interested in determining how well they are covering their territories and what specific customers and customer groups should be contacted in each area.
To carry on this type of study it is necessary to compute market potentials by territory for each major customer group served by the firm. An analysis is normally prepared for each area showing the major customer groups, their market potentials, and the firm's sales performance with each group. A customer or prospect list is also sometimes provided. The data for these analyses are secured from individual customer census reports, publications such as *County Business Patterns* published by the Department of Commerce and from trade directories.

This type of study is used by regional sales managers to assess market performance and determine which customer groups and customers should be cultivated more intensively. For example, one sales manager, on reviewing this type of report found that the market potential for contractors was large. He immediately developed a sales program for contractors that included weekly sales calls on the ten largest contractors in the area.

Several case studies of the analysis of territorial customer coverage are cited to illustrate specific procedures used. One firm in the industrial market prepared a "Customer Report" (Figure 5) for each sales area, which showed the major customer groups in the area, the firm's sales to and performance with each group, the number of customers in each group, the number of key accounts in each group, and the firm's key account performance. The market was highly concentrated, and the firm was interested in an
<table>
<thead>
<tr>
<th>Customer Group</th>
<th>1956 Developed Mkt. Potential $000</th>
<th>1956 Sales $000</th>
<th>1956 Percent Mkt. Potential Secured</th>
<th>Number of Customers</th>
<th>Number of Key Accounts</th>
<th>Key Account* Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Food</td>
<td>240</td>
<td>40</td>
<td>17</td>
<td>105</td>
<td>11</td>
<td>9</td>
</tr>
<tr>
<td>Plastics</td>
<td>340</td>
<td>90</td>
<td>26</td>
<td>48</td>
<td>7</td>
<td>3</td>
</tr>
<tr>
<td>Transportation</td>
<td>330</td>
<td>180</td>
<td>55</td>
<td>60</td>
<td>10</td>
<td>0</td>
</tr>
<tr>
<td>Petroleum</td>
<td>610</td>
<td>150</td>
<td>25</td>
<td>50</td>
<td>9</td>
<td>5</td>
</tr>
<tr>
<td>Glass</td>
<td>520</td>
<td>125</td>
<td>24</td>
<td>75</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td>Metal Fabrication</td>
<td>780</td>
<td>300</td>
<td>38</td>
<td>138</td>
<td>14</td>
<td>5</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>120</td>
<td>25</td>
<td>21</td>
<td>80</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td><strong>Area Total</strong></td>
<td><strong>2,940</strong></td>
<td><strong>910</strong></td>
<td><strong>31</strong></td>
<td><strong>556</strong></td>
<td><strong>59</strong></td>
<td><strong>26</strong></td>
</tr>
</tbody>
</table>

*Number of Key accounts where 25% of purchases is not obtained

Source: Company name and data are fictitious.
intense cultivation of key accounts. A key account was defined as one with purchases of the product from all sources of at least $20,000 annually. A standard was established that at least 25 percent of the total purchases should be secured from each of these accounts.

The Monsanto Chemical Company used a similar report, but in addition they prepared a "Key Account Report" (Figure 6) for each key account which showed its total purchases of chemicals from all sources, Monsanto's performance with the account for a period of years, the name of the salesman calling on the account, the territory in which the account was located, the customer's type of business, and the principal competitors. A remarks section was also included in which other items of information about the customer were recorded and the firm's current market position explained. Much of the data for these reports was secured from the salesman calling on the account. These reports were used to plan future sales programs aimed at improving the firm's position with key customers.

General Electric's control department also utilized developed market potentials by territory to improve customer coverage. A report (Figure 7) was prepared for each trading area which showed the major industries in the area, the number of plants in each industry, the number of large plants in each industry and the market potential of each industry group. The total market potential of the area, the firm's sales and market position, the previous
### FIGURE 6

**KEY ACCOUNT REPORT**

**X Y Z COMPANY**

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Purchases (all sources)</th>
<th>Monsanto % Secured</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1956</td>
<td>28</td>
<td>53</td>
<td></td>
</tr>
<tr>
<td>1955</td>
<td>24</td>
<td>55</td>
<td>Salesman: C. C. Jones</td>
</tr>
<tr>
<td>1954</td>
<td>20</td>
<td>58</td>
<td>Territory: St. Louis</td>
</tr>
<tr>
<td>1953</td>
<td>17</td>
<td>57</td>
<td>Business: Plastics</td>
</tr>
<tr>
<td>1952</td>
<td>15</td>
<td>60</td>
<td>Principal Competitor: #1</td>
</tr>
<tr>
<td>1947</td>
<td>4</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>1942</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

Remarks:

1. X Y Z desires several sources of supply. They divide the business between Monsanto and competitors #1 and #3. Monsanto should continue to secure the largest share.

2. Monsanto will receive increased business as the customer grows, but there is little chance for a greater percentage of the customer's business.

Source: Data are fictitious.
FIGURE 7

GENERAL ELECTRIC COMPANY
ST. LOUIS TRADING AREA
1956

**Customer Analysis**

<table>
<thead>
<tr>
<th>Industrial Group</th>
<th>Number of Plants</th>
<th>Number of Large Plants</th>
<th>1956 Developed Mkt. Potential</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemical</td>
<td>262</td>
<td>7</td>
<td>320</td>
</tr>
<tr>
<td>Stone, Clay, and Glass</td>
<td>149</td>
<td>7</td>
<td>140</td>
</tr>
<tr>
<td>Primary Metal</td>
<td>852</td>
<td>30</td>
<td>1,320</td>
</tr>
<tr>
<td>Construction</td>
<td>190</td>
<td>12</td>
<td>620</td>
</tr>
<tr>
<td>All others</td>
<td>89</td>
<td>11</td>
<td>450</td>
</tr>
<tr>
<td><strong>Area Total</strong></td>
<td><strong>1,542</strong></td>
<td><strong>67</strong></td>
<td><strong>2,850</strong></td>
</tr>
</tbody>
</table>

**Market Position**

<table>
<thead>
<tr>
<th>1956 Developed Market Potential $000</th>
<th>1956 Sales $000</th>
<th>Percent of Market Potential</th>
<th>1955 Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>2,850</td>
<td>517</td>
<td>18</td>
<td>17</td>
</tr>
</tbody>
</table>

**Large Plants**

<table>
<thead>
<tr>
<th>Name</th>
<th>Industry</th>
<th>Employment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Alpha Corporation</td>
<td>Cement</td>
<td>950</td>
</tr>
<tr>
<td>2. Beta Company</td>
<td>Air Craft</td>
<td>1,574</td>
</tr>
<tr>
<td>3. Zeta Corporation</td>
<td>Construction</td>
<td>608</td>
</tr>
</tbody>
</table>

Source: Data are fictitious.
year's market position, and a list of the large plants were also included. The data for these reports were secured from County Business Patterns and published trade directories. Motor controls are sold primarily through distributors. General Electric prepared these reports because the company discovered that local distributors usually had little idea of the important customer groups in their areas or of the specific firms to contact. These analyses were helpful to General Electric's salesmen in guiding local distributors to a more effective coverage of their territories.

The majority of the industrial firms surveyed analyzed territorial customer coverage by using territorial market potentials. Because of the nature of their markets, consumer firms usually did not perform this type of analysis except in certain areas where special market surveys were conducted.

Territorial Allocation of Sales Manpower

Territorial market potentials are also helpful in deciding whether sales manpower is allocated properly and in pinpointing those areas where additional manpower is required. Two approaches are used in studying this problem. The most popular is to determine the amount of market potential normally required to support one of the firm's salesmen. This is difficult to arrive at and ordinarily a great many factors, such as market potential, sales potential, the firm's relative position in various types of markets, sales expenses, travel requirements, and the coverage required by various types of customers, are considered in the analysis. The
derived figure is then used together with territorial market potentials to compute the manpower requirements for each territory. The actual manpower assigned is compared with the computed requirements for each area to determine where manpower should be added or reassignments made. In practice, personnel overages are usually covered by growth or normal attrition rather than by reassignment.

The determination of manpower allocations by one industrial firm is an excellent example of this approach. The firm determined by a study of various factors, including its sales expenses and market position in various types of markets, that $400,000 of market potential was required to support one salesman in territories with a market potential density of more than $50,000, and that $250,000 of market potential was required to support one salesman in areas with a market potential density of $50,000 or less. Market potential density was defined as the market potential of a territory divided by its square miles. It was indicated that there were two principal factors involved, travel and competition. In the dense market areas competition was intense, but less travel was required. In the less dense areas travel was greater, but competition was less intense. The firm utilized these factors together with developed market potentials by territory to compute manpower requirements in each area. The actual manpower assigned was then compared with these requirements. It was found that in most areas the firm was undermanned. Based on this finding, a long-term program was initiated to increase gradually the manpower assigned in all areas.
The second approach to the study of manpower allocation utilizes a manpower index which is computed by dividing the percentage of the firm's total number of salesmen assigned in each territory by the percentage of the national market potential in the territory. For instance, if Chicago has 3 percent of the assigned manpower and 4 percent of the total market potential, its index is 75, which means that it is relatively undermanned. On the other hand, if New York has 5 percent of the assigned manpower and 4 percent of the total market potential, its index is 125, which means that it is relatively overmanned. This technique has the serious disadvantage of assuming that manpower should be directly proportional to market potential, which is not generally true. It has the advantage of being simple to apply and easy to understand. It is believed that this method is useful as a general guide to manpower allocation provided the user recognizes its limitations.

This approach has been applied successfully for several years by one consumer goods manufacturer. The firm computes the manpower index in the same manner as described above. However, it is not concerned with areas which show an index value of between 80 and 120. These are considered as normal variations due to basic differences in markets. Areas which show index values beyond the above limits are studied further for possible additions to or reassignments of sales manpower. It is estimated that roughly 20 percent of the areas are overmanned and 20 percent are undermanned according
to these standards. This manpower analysis is made yearly. The firm attempts to correct the situation by assigning the bulk of the new sales personnel to the undermanned areas and by not replacing those personnel that are lost in the overmanned areas. This procedure has been successful in reducing the inequities in the firm's over-all manpower allocation.

The companies included in this study reviewed their manpower allocations periodically. Many factors were considered in the analysis; however, territorial market potential was usually one of the most important factors. Several firms allocated their sales personnel to territories solely on the basis of market potential, but these companies were in the minority.

Realignment of Sales Territories.

Territorial market potentials are also one of the most important factors used to study sales territories for possible realignment. This type of analysis is significant because territorial markets are constantly shifting and expanding, and companies must adjust their territories to meet these changed conditions if they are to market their goods effectively.

One type of analysis which can be made is to compare the market potentials of existing territories for imbalances. An industrial goods manufacturer that made this type of study found that its sales districts were about equal in company sales, but were unequal in market potential. Based on this finding steps were taken to revise the organization structure so that districts were more nearly equal in potential.
A comparison of territorial market potentials for several years may also reveal shifts that have taken place in the market. An industrial goods firm, for instance, found that growth in certain western states had been rapid and, as a result new sales districts were required. It was also determined that certain areas of the South and East were relatively smaller in size. Plans were made to combine several of the districts in these areas.

A standard type of review used frequently is to study market potentials and other economic factors for the smallest geographic unit available to determine where new sales territories should be created. A consumer goods firm studies some 2,000 trading areas periodically to pinpoint possible new sales territories. No set procedure is used, but the two most important factors considered are the area's market potential and its future economic growth as measured by projected increases in population. The regional sales manager's opinions are also secured before any final decisions are made. This analysis is conducted every two years. Areas selected are placed on a reserve list, and new territories are created from this list as sales manpower becomes available.

Market potential data are also useful in determining the location of branch warehouses. General Electric Supply Company, for example, found that in order to offer satisfactory customer service it should probably have a branch warehouse in all counties with a
market potential of over $1,000,000. An annual review is made to locate the counties which meet this criterion where the company does not have a warehouse. These counties are then studied in detail by a marketing team to determine the feasibility of establishing local warehouses.

Companies presently operating in limited geographic areas utilize potential data to set priorities for territorial expansion. The normal procedure is to establish the priority of certain areas for expansion on the basis of market potential and other factors; although, in some instances, potential is the sole factor considered. For example, one company which sold in only two states established priorities for expansion to other states solely on the basis of state market potentials. Another firm which sold in only several large cities established priorities for expansion to other cities on the basis of market potential and the amount of local competition.

The firms included in this investigation realigned their sales territories periodically. Market potential was usually considered as one of the most important factors in this analysis. Most firms conducted this type of study every two or three years, but several companies that were operating in highly dynamic markets made this analysis annually.

**Allocation of Regional Advertising Appropriations**

Firms selling in markets where local or regional advertising media are employed find that potential data are helpful in the
allocation of territorial advertising funds. The customary procedure is to allocate a given total regional advertising budget to territories based on an analysis of market potential, sales potential, competition, special sales campaigns and other factors. For instance, a consumer goods firm allocated advertising funds for spot radio and television commercials and newspaper advertising in proportion to the potentials of the areas served. Another company selling general merchandise through retail outlets studied sales potentials by territory and several other factors in allocating advertising funds for local newspaper and direct mail advertising. The companies surveyed that employed regional or local advertising used market and sales potentials by territory as two factors in allocating territorial advertising funds; however, a large proportion of the firms advertised only in national media.

Conclusion

Territorial market potentials are a valuable management tool in planning, organizing and controlling the firm's marketing activities. Their most significant use according to the firms studied is the measurement of territorial market position. It is recognized that the practices of the individual firm depend upon the problems encountered. However, it is believed that the company researcher
should examine his operation periodically to determine how territorial market potential information can be used more effectively in solving the firm's business problems. It is hoped that the material presented in this study will stimulate the thinking of researchers who are making this type of review.
CHAPTER IV
PREPARING TO COMPUTE TERRITORIAL MARKET POTENTIALS

Several items should be considered before selecting a method to compute territorial market potentials. These are the geographic units to be used, the economic data available for use, and the territorial potential data available through industry reporting. These factors are discussed briefly in this chapter.

Selection of Geographic Units

The basic units for which territorial market potentials are computed are the state, the metropolitan area, the firm's sales territory, the county, and the trading area. The state is seldom selected because it is usually too large to be of much use in sales control. Firms sometimes compute market potentials for metropolitan areas, especially if their markets are confined largely to urban centers. The metropolitan area is defined by the Bureau of the Census as an area with at least one city of 50,000 population and with an over-all area population of more than 100,000. The Census Bureau defined 182 standard metropolitan areas in the 1958 Census of Business.

The county is a very popular unit for the computation of market potentials because many types of statistical data are available for counties. For example, Sales Management magazine provides data on retail sales, population, employment, payrolls,
buying income and other factors for each of the some 3000 counties in the United States.\(^1\) Another advantage of the county unit is that it is a relatively small area which can be combined readily into other types of geographic units. Many firms make the basic computations for counties and then combine these data to secure market potentials for other types of geographic units.

The trading area is also a very popular unit for the computation of market potentials. Trading areas attempt to describe the way business is actually done. One author defines the trading area as "a central city, plus the surrounding area which commonly buys in that city."\(^2\) Most of the trading area systems which have been developed by private organizations or individual firms define trading areas in terms of counties. For example, one industrial products firm defines its Cleveland, Ohio trading area as Cuyahoga, Lorain, Geauga, Medina and Ashtabula counties, Ohio. The majority of the firms included in this study computed trading area market potentials. The customary procedure was to compute county market potentials and then combine these to determine trading area data.

A number of organizations have developed trading area systems

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which are supposedly applicable to broad categories of markets.

The following are the most popular of these:

<table>
<thead>
<tr>
<th>Name of Publisher</th>
<th>Number and Type of Trading Areas</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Hagstrom Publishing Company</td>
<td>96 industrial trading areas</td>
</tr>
<tr>
<td>2. Conover-Mast Publishing Company</td>
<td>272 industrial trading areas</td>
</tr>
<tr>
<td>3. Rand-McNally Publishing Company</td>
<td>368 consumer trading areas</td>
</tr>
<tr>
<td>4. Curtis Publishing Company</td>
<td>501 market areas</td>
</tr>
<tr>
<td>5. National Electrical Manufacturers Association</td>
<td>613 consumer and 123 industrial areas</td>
</tr>
<tr>
<td>6. Iron Age Magazine</td>
<td>approximately 150 industrial areas</td>
</tr>
<tr>
<td>7. Sales Management Magazine</td>
<td>approximately 1700 city areas</td>
</tr>
<tr>
<td></td>
<td>and 300 metropolitan areas</td>
</tr>
<tr>
<td>8. Hearst Magazines, Inc.</td>
<td>613 consumer areas</td>
</tr>
</tbody>
</table>

Several firms have been able to apply these general trading area systems successfully. However, in most cases published systems cannot be used for particular markets without substantial modification. The usual procedure is to use the published systems as general guides, but to develop trading areas tailored to fit the specific products being considered. For example, one firm used the Hearst, Hagstrom, and Iron Age trading area systems as general guides, and then defined some 300 trading areas for its specific products.
Thus, several different geographic units are used for the computation of market potentials. The selection of a unit in a particular instance is largely dependent upon the type of market being studied and the individual problems of the firm. The researcher should select a unit for the original computations on which sales and economic factor data can be secured and which is relatively flexible so that it can be combined into other types of geographic units which may be required. The county unit was used widely for original computations by the companies surveyed.

Sources of Data

A large part of the task of determining territorial market potentials often is the location of published data on economic factors which can be employed in the analysis. The most popular general sources for industrial market data are the following:

1. County Business Patterns published by the Department of Commerce. This biennial publication presents data on payrolls, number of employees, and the employment size distribution of commercial and manufacturing establishments for every county in the United States.

2. F. W. Dodge's Construction Reports. This organization prepares reports on the dollar value and square footage of residential, commercial, and industrial building contract awards. Data are available by county. Special tabulations are also prepared by this firm according to the client's specifications.
3. **Metalworking Markets** published by the Penton Publishing Company and **Basic Marketing Data** published by the Chilton Publishing Company. These publications present detailed employment statistics for metalworking plants.

4. **The Census of Business, The Census of Manufactures** and **The Census of Agriculture**. These are important data sources useful in most market potential studies.

5. **Sales Management's** "Survey of Industrial Buying Power". This annual publication presents county data on manufacturing employment and number of manufacturing plants by industry classification.

**The Standard Industrial Classification Manual** prepared by the Bureau of the Budget is also explained briefly because it is of considerable value to researchers who are determining industrial market potentials. This manual was prepared for use in connection with the collection, tabulation, and presentation of data supplied by manufacturing and non-manufacturing business establishments. The manual provides for the classification of all establishments according to the products manufactured or the services sold into major groups, sub-groups, and industry groups so that one can secure as broad or as detailed a classification as is required for a particular project. The classification groups are coded numerically, e.g., the major group machinery (except electrical) is coded 35, the sub-group metal working machinery within the
machinery group is coded 354, and the industry group machine tools
within the metal working machinery sub-group is coded 3541. The
manual is published in two volumes and is available from the U. S.

Industrial researchers should be thoroughly familiar with this
manual because many private and government organizations use this
classification system in presenting industrial economic data. For
example, County Business Patterns, Basic Marketing Data, and
Metalworking Markets use these codes in presenting industrial
employment data. The manual is also useful to industrial re­
searchers in relating data secured from industrial establishments
by market surveys to published statistics. For instance, if twenty
firms were classified according to the manual as belonging to the
flat glass industry, the survey data could be related to published
employment, production and other data for the flat glass industry.

The most popular general sources for consumer market data
are listed:

1. Sales Management's "Survey of Buying Power." This annual
publication presents county and city data on population,
effective buying income, retail sales, and many other factors.
2. Decennial Census of the United States. This is the basic
source of population statistics; however, it also contains
valuable information on such factors as housing and
employment.
3. **State Bureau of Motor Vehicle License Reports.** These bureaus publish data on the number and types of vehicles registered in each county in the state.

4. **1956 County and City Data Book.** This government publication contains tabulations of 128 statistical items for regions, states, metropolitan areas and counties. Selected data are from many sources including the *Decennial Census of Population*, *The Census of Business*, and *The Census of Manufactures*.

5. **Editor and Publisher Market Guide** published annually by The Editor and Publisher Co., Inc. This source contains data for states, counties, and cities on population, housing, income, gas and electric meters and many other statistical factors. Similar information is found in the Standard Rate and Data Service's monthly publications.

A source not widely used at the present time, but which was being investigated by several firms, is the *Survey of Consumer Expenditures* published by the University of Pennsylvania in cooperation with the Bureau of Labor Statistics. This 18 volume study which contains data on the purchases in 1950 of some 1500 items by 12,500 families in 91 representative cities should be valuable to researchers who are computing market potentials for consumer goods.
Evaluation of Available Economic Factor Data

Many of the firms included in this study were not completely satisfied with the economic factor data available for use in market potential determination. The criticisms raised most frequently were:

1. Employment data for industrial firms are often reported by Standard Industrial Classification Code according to the major products manufactured by the firm, e.g., if a company's production is 60 percent compressors and 40 percent electric motors, it is classified as a compressor manufacturer and its data reported accordingly. This situation often leads to errors in the market potentials computed with this employment data because a customer's major industry may be a market for certain products while its secondary industry is not a market for these products, or vice versa.

2. Employment data reported by certain publications are average figures for a particular month or a particular quarter and do not take into account seasonal variations in employment. For example, one source published employment data for Detroit, Michigan, which were not representative because the automobile industry was changing models at the time they were collected. Use of non-representative employment data often leads to errors in territorial market potentials based on employment statistics.
3. Data on many useful factors are not available on a regional basis. For example, one firm found that market potential was closely related to capital expenditures, but regional data on this factor were not available.

4. Some types of data are published infrequently and thus firms are required to make interim estimates based on original data that are often five to ten years old. For example, some types of data are secured only from the Decennial Census of the United States.

5. The government does not disclose data for any area if it reveals confidential facts about one firm in the area. Thus data for certain key customers are lost if they happen to be the only firm or the dominant firm in a particular area. For example, much of the data for the electrical industry in Schenectady, New York, is restricted because General Electric accounts for the majority of that industry's production in Schenectady.

The above factors are valid shortcomings of the data presently available and efforts should be made by data collection agencies to solve these problems. However, it is believed that these limitations will not restrict seriously the majority of firms wishing to compute territorial market potentials.

**Industry - Reported Data**

The researcher should determine whether territorial developed market potentials for the product being studied are available in
published form through industry reporting. The usual procedure with industry reporting is for all of the firms selling a particular product or products to report their sales during a given time period in prescribed geographic territories to a private or governmental agency which consolidates the data from all of the reporting firms to determine territorial developed market potentials. The tabulated data are sometimes published widely, and in other cases they are revealed only to the reporting firms. The individual firm's sales data are always treated confidentially.

There are two types of industry reporting, required and cooperative. Under required industry reporting, the firms selling a particular product are required by law to report their sales data, usually for licensing or tax purposes. For example, companies selling beer or gasoline must report their sales of these products in each state to the respective state governments for tax purposes. The state governments then consolidate the data received from all firms and issue state tax reports which indicate the annual developed market potentials for beer and gasoline in their states. A variation of required industry reporting is the reporting by consumers of purchases or ownership of certain products usually for licensing or tax purposes. These data are consolidated by various agencies, and reports are published which indicate the developed market potentials for these products. For example, the
purchasers of new automobiles and commercial vehicles are re-
quired to purchase licenses for these vehicles from their state
governments. Various specialized reporting agencies collect these
data and publish a monthly report (on new vehicle sales) by county.

Cooperative industry reporting differs from required reporting
in that firms are not required to report their data by law, but do
so cooperatively for the mutual benefit of the reporting firms.
Each firm selling the product reports its territorial sales data
to a trade association or other agency which tabulates the data for
all reporting firms and issues a consolidated report. In some
instances all firms in the industry do not report. In this case
the reported territorial sales are not equal to territorial developed
market potentials and must be adjusted for non-reporting firms
before they can be utilized for planning and control purposes.

An illustration of cooperative industry reporting is the
collection and tabulation of territorial sales data for refrigerators
and other electrical appliances by the National Electric
Manufacturers Association. This trade association collects monthly
data from all its members on the sales by distributors of such
items as electric refrigerators in each county in the United States.
It is estimated by one industry source that approximately 90 to
95 percent of the total production of these items is accounted for
by reporting members. The trade group requires approximately
three months to process and tabulate data. A monthly consoli-
dated report by county is sent to all reporting members as soon as
it is available. The data are tabulated by electric business machines and each reporting firm receives a deck of punched cards containing its own sales data and the consolidated sales data for all reporting firms. The American Home Laundry Association uses a similar approach to secure territorial developed market potentials for washers and dryers.

In the industrial goods area, the American Supply and Machinery Manufacturers Association collects data from its members on the sales of six classes of products to industrial distributors. The data are collected biennially and developed market potentials for these six classes of products are published for states, metropolitan areas, and 141 industrial trading areas. The members report their territorial sales to a public accounting firm which tabulates the data and then destroys the individual reports. Specific products included in this report are hand tools, pumps, valves, power transmission equipment, materials handling equipment and other types of products sold through industrial distributors. The National Electrical Manufacturers Association also collects territorial sales data from its members for some types of electrical equipment and publishes an annual report for members of the developed market potentials for these products for 123 industrial trading areas.

The number of firms surveyed is too small to provide any significant conclusions regarding the accuracy of industry-reported territorial market potentials; however, several over-all indications were obtained. The firms receiving government-reported data were in general agreement that this source was highly accurate in most cases. There was little agreement, however, among the firms receiving trade association data. One firm reported that the territorial market potentials published by its trade association were always highly accurate, while another firm indicated that the data received from its trade group were very poor and that reporting firms were falsifying data or significant clerical errors were being made. Another company was dissatisfied with trade association data because the product groupings were so broad that they were practically useless. This firm's trade group reported giant cranes and wheelbarrows in the same product classification. The same criticism was made of government data by another firm. Thus, government reported data are generally accurate, probably because of the legal factor, but trade association data should be reviewed carefully before they are utilized in practice.

Published market potentials by geographic area are not available for most types of products. Of the 53 products examined in this study, territorial developed market potentials were available for only 9 and potentials for geographic units smaller than the
state were available for only 4. Since most firms require potentials for relatively small geographic units, satisfactory data were available for less than 10 percent of the products studied.

The majority of the companies studied indicated that they were in favor of an exchange of territorial sales data; however, they also mentioned several factors restricting exchanges of such data. A factor mentioned by several firms is the lack of a trade association or trade group for the particular product in question; hence, no agency is available to collect, tabulate, and distribute the data. A more important factor mentioned by many of the firms is that one or more of the principal firms in a given trade association are opposed to the exchange of this type of data and block any action by other members. In many of these groups, the unanimous consent of the membership is required for action and this is usually difficult to secure, especially on as controversial a matter as the exchange of information. In other trade groups, the members who wish to exchange data can do so. However, in many cases, these firms account for only 50 percent to 60 percent of the total industry production and their data are not exchanged because they are relatively incomplete.

Several firms indicated that they were opposed to any exchange of territorial sales data because they believed that they would lose more by this action than they would gain. For example, one manufacturer which accounted for over half of the total industry production of certain products believed that it would be
foolish to consent to any exchange of territorial sales information. In another instance, a company reported that it had a better knowledge of territorial markets than did any of the competitors in the industry, and that it would lose this advantage by consenting to an exchange of territorial sales data. The above factors help to explain the lack of industry-reported territorial market potentials. It also appears that these factors will continue to restrict the availability of this type of data.

Summary

Before selecting a method of determining territorial market potentials, the researcher should determine the geographic units which will be used for the potentials, the economic factor data available for use, and the territorial potential data available through industry reporting. Once these factors have been considered, he is ready to select a method.
CHAPTER V

METHODS OF DETERMINING TERRITORIAL MARKET POTENTIALS

The two basic methods of determining market potentials by territory are economic factor and customer census. This chapter is devoted to the explanation, illustration and evaluation of these two methods.

Economic Factor Method

The economic factor method requires the estimation of the relationship between market potential and an economic factor or factors. This is done either by statistically correlating a series representing market potential, such as company sales, with the factors or by judgment. The estimated relationship is then used together with published regional factor data to determine market potentials by territory.

An example is cited to illustrate this method. An industrial goods firm obtained 1954 developed market potentials by state from the Census of Business. The firm desired 1957 developed market potentials by trading area. The state potentials from the 1954 Census of Business were correlated with 1954 data for several economic factors, and a close relationship was discovered. The firm then estimated 1957 trading area market potentials by using 1957 economic factor data for each trading area with the 1954 correlation formula.

Correlation Approach

Statistical correlation can be used to estimate the relationship
between the market potential for a product and various economic factors. Several variations in this approach are possible, depending upon the type of data used as the dependent variable and the number of economic factors used.

Four different types of data may be used as the dependent variable in the correlation procedure:

1. The firm's sales by territory. In using these data the researcher assumes that the relationship between sales and certain economic factors is similar to the relationship between market potential and these factors.

2. Developed market potential for larger territories than desired. The use of these potentials requires the assumption that the relationship between market potential and certain economic factors for the large territories holds true for smaller areas.

3. Historical developed market potentials by territory. In using these data it is assumed that the relationship determined for the past years is similar to the relationship in the current year.

4. The individual amounts purchased by a sample of customers. For instance, one might study the relationship between employees and the purchases of a given product for a sample of 100 plants in order to establish the

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1. For an explanation of statistical correlation see any textbook on statistical methods.
the relationship between the market potential of the product and this factor. The use of this approach requires the assumption that the relationship derived for the sample is similar to that which exists in each territory. The approach differs from the customer census method discussed later in that only a small sample of customers is studied. With the customer census one normally obtains purchase data from the entire universe.

In studying a particular market the researcher should determine what data are available for use as the dependent variable. If several types of data can be obtained it is usually good practice to compute separate correlations with each series and compare the results secured. The General Electric Supply Company, for instance, in determining 1959 market potentials by territory for small appliances computed two separate correlations using 1954 company sales by territory as the dependent variable in one and 1954 developed market potential by territory obtained from the Census of Business as the dependent variable in the other. Company sales showed a correlation of $r = .83$ and developed market potential a correlation $r = .95$ with Sales Management's "Buying Power Index" for 1954. Company sales by territory for 1959 were also correlated with the "Buying Power Index" for 1959. A correlation of $r = .85$ was secured. Based on these findings, the 1959 market potential in the United States was allocated by territory according to the "Buying Power
Index. In many cases, however, these comparisons cannot be made because only one type of data, usually company sales, are available for use as the dependent variable.

One or several economic factors may be used as the independent variable in the correlation procedure. The selection of the number of independent variables is largely dependent upon the market being studied. Each situation should be appraised individually by the researcher. Simple correlation is employed when one independent variable is used and multiple correlation is employed when several independent variables are used. To avoid the complexities of multiple correlation researchers sometimes combine several independent factors into a composite factor. For example, in studying the market potential for electrical appliances, data on the number of wired homes and family income were combined to make a composite factor which showed a better relationship with the electrical appliance potential than any single factor. This procedure is not recommended, however, if the researcher is in a position to compute multiple correlations since better results are theoretically obtained with this method.

The independent variable for the correlation procedure is normally selected by assembling territorial data for all economic and other factors suspected of bearing a relationship to the market potential. The various independent factors are plotted on coordinate paper, with the specific factor being considered shown on the X axis and the dependent variable on the Y axis. This type of chart, which is known as a scatter diagram, is illustrated in Figure 8. A
FIGURE 8

SALES OF X Y Z CORPORATION AND TOTAL MANUFACTURING EMPLOYMENT FOR 20 INDUSTRIAL TRADING AREAS 1959

Thousands of Dollars
of Sales

0
20
40
60
80
100

Number of Manufacturing Employees
(in thousands)

25 50 75 100 125

Source: Company name and data are fictitious.
separate scatter diagram is prepared for each of the proposed factors. These are used to select visually the factor or factors bearing the best relationship with the dependent variable. Actual correlations are then computed for only these factors.

It is difficult to determine what degree of correlation is required to obtain usable territorial market potentials. The majority of the researchers contacted in this study believed that a correlation of at least .7 is desirable. From a statistical standpoint a correlation of .7 is probably the minimum acceptable figure since with a correlation below .7 less than 50 percent of the variation in market potential is explained by the economic factors. All of the firms studied using this approach obtained correlation coefficients above .8 and several firms secured correlation coefficients of over .9.

The coefficient of correlation is a general indicator of the accuracy of computed territorial market potentials, but it cannot be used to measure the percentage of error. Some researchers believe that if a .94 coefficient of correlation is obtained, the error in each of the territorial potentials is 6 percent. This is not true because, assuming that the technique has been applied legitimately, the error of individual potentials is determined by the standard error of estimate, not the coefficient of correlation. Furthermore in most cases, the standard error of estimate cannot be employed because the researcher has used sales or some other series
in place of potential in the computations. Thus, in most instances no statistical measure is available to compute the percentage of error in the individual potentials determined with correlation.

After a significant correlation is obtained, one of several procedures may be used to secure the market potentials by territory. If a single independent variable is used, the total United States market potential is allocated to each territory according to the value of the factor for that territory. For instance, if telephones are the independent variable and Chicago has 5 percent of the telephones in the United States, it would be allocated 5 percent of the total potential for the product. In multiple correlation when historical market potentials are used as the dependent variable, the desired territorial potentials are secured by substituting the current year's economic factor data for each territory into the correlation equation. If the firm's sales are used as the dependent variable in the multiple correlation procedure, the output of the correlation equation for each territory must be multiplied by a factor reflecting the firm's national market position to arrive at market potential estimates. For instance, if the firm secured 20 percent of the national market potential in 1959, the output of the correlation equation for each territory is multiplied by five to obtain estimates of the market potential. In many cases the territorial data used for the multiple correlations are shown as percentages of the national totals.
The derived territorial potentials are then expressed as percentages of the national market potential. These percentages can be converted to dollars by multiplying them by the national market potential stated in dollars.

A complete case study is offered to illustrate the application of the correlation approach. An industrial products firm obtained 1954 developed market potentials for product X for 25 sales areas from the Census of Business. The problem was to estimate 1958 developed market potentials for the 25 areas and, also, to devise a means for estimating the developed market potential of any territory.

Data for various economic factors for the 25 sales areas were collected. Scatter diagrams were drawn to help select those factors bearing the best relationships with market potential. It was determined that two factors, A and B, should be used. Factors A and B are based on electrical contracting employment, manufacturing and mining employment, Sales Management's "Buying Power Index", and electric utility meters. The exact weightings used are confidential.

The 1954 market potentials and economic factor data for the 25 sales areas are shown in Table 1. The sales area data are

2. Other case studies of the correlation approach are found in Chapter VII beginning on Page 127.
### Table 1

**Market Potential for Product X and Economic Factors A and B for 25 Sales Areas**

1954

<table>
<thead>
<tr>
<th>Sales Area</th>
<th>Market Potential $X^1_1$</th>
<th>Factor A $X^1_2$</th>
<th>Factor B $X^1_3$</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>11.9</td>
<td>11.7</td>
<td>12.4</td>
</tr>
<tr>
<td>2</td>
<td>8.6</td>
<td>8.7</td>
<td>10.0</td>
</tr>
<tr>
<td>3</td>
<td>6.7</td>
<td>7.1</td>
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<td>1.1</td>
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</table>

Total 100.0 100.0 100.0

Mean 4.0 4.0 4.0

Source: Market potentials were obtained from the Census of Business. The factor data are confidential.
expressed as percentages of the national totals. The following values required to derive the correlation estimating equation are computed with data from Tables 1 and 2 using the following equations:

\[
\begin{align*}
\xi x_1^2 &= \xi x_1^2 - \xi x_1 \bar{x}_1 \\
134.4 &= 534.4 - (100) (4.0) \\
\xi x_1 x_2 &= \xi x_1 x_2 - \xi x_2 \bar{x}_1 \\
124.3 &= 524.3 - (100) (4.0) \\
\xi x_1 x_3 &= \xi x_1 x_3 - \xi x_3 \bar{x}_1 \\
149.6 &= 549.6 - (100) (4.0) \\
\xi x_2 x_3 &= \xi x_2 x_3 - \xi x_3 \bar{x}_2 \\
137.7 &= 537.7 - (100) (4.0) \\
\xi x_2^2 &= \xi x_2^2 - \xi x_2 \bar{x}_2 \\
125.0 &= 525.0 - (100) (4.0) \\
\xi x_3^2 &= \xi x_3^2 - \xi x_3 \bar{x}_3 \\
206.0 &= 606.0 - (100) (4.0)
\end{align*}
\]

The coefficients for the correlation estimating formula are obtained by solving the following equations:

\[
\begin{align*}
\xi x_1 x_2 &= b_a \xi x_2^2 + b_b \xi x_2 x_3 \\
\xi x_1 x_3 &= b_a \xi x_2 x_3 + b_b \xi x_3^2 \\
124.3 &= 125.0 b_a + 137.7 b_b \\
149.6 &= 137.7 b_a + 206.0 b_b \\
b_a &= .7368 \\
b_b &= .2338
\end{align*}
\]
TABLE 2
COMPUTATION OF VALUES FOR MULTIPLE CORRELATION OF PRODUCT X AND FACTORS A AND B FOR 25 SALES AREAS 1954

<table>
<thead>
<tr>
<th>Sales Area</th>
<th>$X_1^2$</th>
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<th>$X_1X_3$</th>
<th>$X_2^2$</th>
<th>$X_2X_3$</th>
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<td>1.8</td>
<td>2.9</td>
<td>1.9</td>
<td>1.2</td>
</tr>
</tbody>
</table>

Total  534.4  524.3  549.6  525.0  537.7  606.0

Source: Computed from data in Table 1.
The constant for the correlation equation is secured by using known values with the following formula:

\[ a = \overline{X}_1 - b_a \overline{X}_2 - b_b \overline{X}_3 \]

\[ a = 4.0 - (.7368) (4.0) - (.2338) (4.0) \]

\[ a = .12 \]

The correlation equation for estimating the market potential for any area is then:

\[ X_{1e} = .12 \overline{X}_2 + .7368 X_2 + .2338 X_3 \]

The procedure employed to estimate the market potential for any area is illustrated by estimating the market potential for sales area 1 using the correlation formula with economic factor data from Table 1:

<table>
<thead>
<tr>
<th>Sales Area</th>
<th>( X_{1e} )</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
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</tr>
</tbody>
</table>

The actual 1954 market potential for sales area 1 was 11.9; thus the estimated potential was in error by .3 or 2.5 percent. The estimated potentials for the other areas were computed in the same manner.

A comparison of the estimated and actual 1954 market potentials for the 25 sales areas is shown in Table 3. For most areas, the estimated potentials were in error by less than 5 percent. The largest percentage error was found in sales area 21, 13 percent. In general, the correlation equation appears to provide sufficiently reliable estimates of market potential for the sales areas.
TABLE 3

COMPARISON OF MARKET POTENTIALS ESTIMATED BY THE CORRELATION EQUATION WITH ACTUAL POTENTIALS FOR 25 SALES AREAS 1954

<table>
<thead>
<tr>
<th>Sales Area</th>
<th>Actual Market Potential $X_1$</th>
<th>Estimated* Market Potential $X_{le}$</th>
<th>$X_1 - X_{le}$</th>
<th>$(X_1 - X)100$</th>
</tr>
</thead>
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</table>

Total 100.0 100.0 0 0

*$X_{le} = .12 + .7368 X_2 + .2338 X_3$

Source: Table 1
The coefficient of multiple correlation was computed by using the following formula:

\[
R_{123} = \sqrt{\frac{\xi_{x1(23)}^2}{\xi_x^2}}
\]

\[
\xi_{x1(23)}^2 = b_a \xi_{x1x2} + b_b \xi_{x1x3}
\]

\[
= (0.7368)(124.3) + (0.2338)(149.6)
\]

\[
= 126.56
\]

\[
R_{123} = \sqrt{\frac{126.56}{134.40}}
\]

\[
R_{123} = .97
\]

The correlation coefficient is high indicating a close relationship between the economic factors and the market potential.

The desired 1958 market potentials for the 25 sales areas were estimated by using the 1954 correlation equation with 1958 economic factor data. The assumption was made that the relationship between market potential and the economic factors was the same in 1958 as in 1954. The factor data and the estimated potentials are found in Table 4. The firm also computed 1958 potentials for selected trading areas by using the correlation formula with factor data for these trading areas.

This case illustrates how one firm used the correlation technique to determine territorial market potentials. The same computation procedure would be employed if company sales were used
### TABLE 4

ESTIMATES OF MARKET POTENTIAL FOR PRODUCT X AND ECONOMIC FACTORS A AND B FOR 25 SALES AREAS

1958

<table>
<thead>
<tr>
<th>Sales Area</th>
<th>Factor A ( X_2 )</th>
<th>Factor B ( X_3 )</th>
<th>Estimated* Market Potential ( X_{le} )</th>
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<td>25</td>
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</table>

Total \( 100.0 \) \( 100.0 \) \( 100.0 \)

\* \( X_{le} = 0.12 + 0.7368 \times X_2 + 0.2338 \times X_3 \)

Source: Data are confidential.
as the dependent variable rather than historical market potential. It is hoped that this example may have helped the reader to understand better how the correlation approach is applied in practice.

**Judgment Approach**

The judgment approach calls for the application of analysis and sound business judgment to an organized set of market data to estimate relationships between a given market potential and economic factors. The derived relationships are then used with published regional economic data to compute territorial market potentials.

In theory, this approach is quite similar to correlation. Both methods require the estimation of relationships between market potential and economic factors on which published regional data are available. The primary difference between the two methods is that with correlation a mathematical process is used to estimate these relationships, while with judgment they are arrived at by individual deductive or inductive analysis of the market situation. The judgment method, therefore, does not possess the mathematical exactitude or the theoretical accuracy of correlation; however, it is much more flexible because the analyst can allow for various individual market characteristics which are difficult if not impossible to handle with correlation.

Business firms sometimes compute territorial market potentials based on nothing more than passing guesses by executives who have not taken the time to study the market situation and
who are not trained in this type of analysis. One industrial company selling to manufacturing plants used a well-known consumer buying power index in its computations on the general theory that all markets are eventually related to consumer buying power. Further investigation revealed that the principal reason for using this approach was that the index was readily available, and with it the hoped for information could be obtained in a single afternoon. The market potentials computed by this system were found to be highly inaccurate when tested in practice. Guesswork approaches such as the one described above are often mistakenly classified as judgment methods. They are not considered as legitimate judgment methods according to the definition presented in this study and, therefore, are not treated further.

Two variations of the general judgment method, deductive and inductive, are used in practice. The deductive approach calls for analysis of the total market situation to estimate relationships between economic factors and the market potential being investigated. Territorial potentials are computed by allocating the total market potential, which is usually known, to geographic units on the basis of published regional data on the related economic factors. The deductive approach is also applied where total potential is unknown; however, under this circumstance, the territorial data are expressed in relative percentages of the total rather than in dollars or units. In using the deductive approach
the assumption is made that the relationship between market potential and the economic factors which is valid for the market as a whole is also valid in any territory.

The inductive judgment approach calls for the study of a small group or groups of purchasers to estimate relationships between economic factors and the market potential being investigated. An average purchase or consumption rate per unit of a related economic factor or factors is usually determined in these studies. In some cases available published data on purchases are used to compute the actual purchase rates. Territorial market potentials are computed by applying the average purchase or consumption rates to published regional data on the related economic factors. In using this method, the assumption is made that the average consumption rate determined for a sample of customers is valid in all territories.

The deductive and inductive approaches are also frequently combined in practice. An illustration of this is the method used by an air-conditioning manufacturer. Deduction was employed to analyze certain market segments, and induction was used to study other market segments. Both types of analysis were then combined into a single mathematical formula, which was utilized to compute territorial market potentials.

Many variations in procedure are used in applying the judgment
approach. The following is an outline of a general procedure which can be used to apply either deductive or inductive judgment to any type of market situation:

A. Gather and organize all available market studies and statistics on the market being studied.
   a. Government sources
   b. Trade journals and trade association studies
   c. Internal studies and market surveys

B. Study the market situation for the product.
   a. Specific uses for the product
   b. Types of customers for each use
   c. Buying characteristics of each type of customer
   d. Amount of the product purchased by each type of customer for each use either in absolute amounts or relative to other types of customers

C. Collect additional market data, if necessary, to complete the analysis of the market situation.
   a. Opinions of salesmen
   b. Original market surveys

D. Estimate relationships between market potential and economic factors on which published regional data are available.
   a. The specific factors influencing market potential
   b. The availability of regional data on the above factors

3. Several case studies of the judgment approach are found in Chapter VII beginning on page 141.
c. The statement of the relationships between economic factors and market potential

d. Tests of the validity of the relationships

E. Compute the territorial market potentials by applying the basic relationships to published regional economic data.

F. Verify the judgment method used. (Methods of verification are discussed in Chapter VI.)

Customer Census Method

The customer census method requires that each customer for the product being studied be identified by geographic location and contacted to determine his purchases of the product. Territorial market potentials are computed by tabulating the individual purchases by geographic territory. For example, an industrial equipment manufacturer used its salesmen to contact some 5,000 customers and prospects once each year to determine their purchases of this type of equipment in the previous year. The individual purchase data were then totaled to compute market potentials for some 400 trading areas.

The following steps are usually necessary to apply the customer census method:

1. Identify each customer for the product.
2. Check the customer list for completeness.
3. Contact each customer by some means to determine his purchases of the product.
4. Tabulate the individual customer purchases by geographic area to compute the desired territorial market potentials.
5. Verify the customer census method by checking the computed potentials for accuracy.

The initial step in applying the customer census method is to identify each of the prospective customers for the product being studied. This is generally accomplished through the use of trade and business directories which are available for most types of markets, for instance, the Directory of Verified Electrical Wholesalers published by The McGraw-Hill Publishing Company or Directory of Metalworking Machinery Manufacturers published by the Penton Publishing Company. Information concerning published trade directories which can be used for customer identification is available in the annual Market Data Book published by Industrial Marketing magazine and in Directories, National for Use In Marketing published by the United States Department of Commerce.

Many of the directories classify firms according to the Standard Industrial Classification Manual. In this event, once the industry codes representing potential markets are determined, it is a relatively simple matter to prepare a list of prospective customers. One should be cautious in using this classification code because directories sometimes classify firms only according to their major products; thus, prospective customers are overlooked if their principal business does not represent potential, but their secondary business does. It is advisable, therefore, when using directories of this type to review the status of all large firms so that no important prospects are overlooked.
Firms may have customer or prospect lists which can be used for customer identification; however, these are sometimes unsatisfactory because they are relatively incomplete. To illustrate this point, one company's list which was thought to be fairly complete showed approximately 100 customers in one area. A study of various trade directories produced 50 additional prospects which were previously unknown. Thus, it is generally best to develop an original customer list for the application of this method, and to use existing lists only for checking purposes.

The second step in the application of the customer census method is to check the customer list prepared for each area by comparing it with published group statistics. The actual checks are made by comparing the number of firms in a given classification in an area as reported by the published source with the number of firms in that classification appearing on the customer list for that area. For example, if Basic Marketing Data indicates that there are 18 machine tool manufacturers in area A, and the customer list for that area shows only 12, the firm must account for 6 more machine tool manufacturers in area A.

County Business Patterns published by the Department of Commerce is useful for checking both commercial and industrial customer lists. Basic Marketing Data published by the Chilton Publishing Company is helpful in checking lists of metalworking plants. The various census publications of the U. S. Government, when they are current, are also useful for checking purposes. Exact agreement
between the published group statistics and the customer list cannot be expected. However, as a rule, the two sources should be in approximate agreement. Where significant discrepancies are found, the analyst should review the trade or business directories to determine whether prospective customers were overlooked in the first analysis. Most of the companies studied using the customer census found that a second review of the directories usually produced a satisfactory customer list.

The third step in the application of this method is to collect purchase information from each of the customers. The data may be secured by personal interviews, mail questionnaires or telephone interviews. The information may be collected by the firm's salesmen, the firm's research department or outside research agencies. A combination of several of these procedures is also sometimes used. For example, one company used its salesmen to interview some customers personally and employed company research personnel to contact other customers by telephone. The market potential information may be collected monthly, quarterly, annually, or for some other time period depending upon the needs of the firm; however, too frequent a collection may antagonize respondents and thus result in reduced cooperation. The exact collection procedure which is best for a given situation is determined only by studying the specific conditions involved, and even then the final choice is largely dependent upon the firm's personal preferences.
The fourth step in the use of the customer census method is to tabulate the individual customer purchases by geographic area to determine the desired market potentials by territory. The data may be tabulated from the original forms; however, it is usually best to transfer the data to a more permanent record card before making any computations. If a large number of customer reports is involved and the facilities are available, the data may be transferred to punched cards and then tabulated either electrically or mechanically, depending upon the system. The basic information can also be used to prepare several other types of analytical reports for management use. For example, the purchase statistics can be summarized by industry to determine the market potentials of various industries, or the data for all large customers can be tabulated to compute the potential of this group of customers and the firm's market position. These uses are cited merely to indicate that the basic information is also useful for other purposes.

The fifth step in the application procedure is to verify the customer census method for accuracy. This is ordinarily accomplished by checking the market potentials with published data which are available, by having the sales managers and product specialists review the information for apparent errors, and by comparing data reported by similar types of customers for significant deviations. The various methods of verification used by industry are discussed further in Chapter VI. The tabulated
Two variations of the basic customer census method are used occasionally by industry. The first is to contact the wholesalers or retailers of the product for purchase information instead of the ultimate customers. This procedure reduces the required number of customer contacts by an appreciable amount. A case in point is the practice of a construction products manufacturer which contacted all of the building trade wholesalers to determine their annual sales of various types of building products instead of contacting all of the building contractors to determine their purchases of these products. The principal limitation of this approach is that wholesalers or retailers are sometimes reluctant to disclose their sales data for competitive reasons. This is especially true if they sell relatively large amounts of a competitive manufacturer's products. Despite this limitation, several firms have used this variation successfully either to compute territorial market potentials or to check the potentials computed by other methods.

A second variation of this method, which has been used in several cases, is to limit the customer census to relatively large purchasers in order to reduce the required number of customer contacts. For instance, one firm did not include industrial plants which employed fewer than 50 workers. This approach appears to be
legitimate where the market is highly concentrated and the small customers do not account for a large proportion of the total market potential.  

**Popularity of Methods**

A review of the use of the economic factor and customer census methods by the firms studied provides an indication of their relative popularity. Of the forty firms surveyed, twenty-four employed the economic factor method, five used the customer census, and eleven used both methods. Thus, the economic factor method appears to be significantly more popular than the customer census.

An indication was obtained that the method utilized varies by type of product. Of the twenty-eight firms computing territorial potentials for industrial products, ten employed the customer census, thirteen used the economic factor method and five used both methods. Twenty-four of the twenty-five firms computing territorial potentials for consumer products used the economic factor method because various conditions did not permit the application of the customer census. These conditions are discussed in detail later. Thus, for consumer applications the economic factor method is utilized almost exclusively, while for industrial applications both methods are employed about equally.

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4. Several case studies of the customer census method are Found in Chapter VII beginning on page 157.
Use of the Economic Factor Method

The specific approaches, classified by type of product, used by the thirty-five firms employing the economic factor method are shown in Table 5. It appears that the judgment approach is applied more frequently than correlation for both consumer and industrial applications. This finding is in basic agreement with the experiences of several independent researchers and research organizations who ventured an opinion on the relative usage of correlation by business firms. The comments of these individuals and organizations usually were to the effect that correlation methods have never been very popular and to their knowledge this approach is not widely employed by industry. This conclusion is also supported by several agencies selling computers and computation services. These firms report that they know of very few projects where computers or other tabulating equipment were used with statistical correlation to determine market potentials.

A tendency on the part of researchers to employ simple rather than multiple correlation was discovered although the number of companies involved is too small to provide conclusive results. An indication was also obtained that in using judgment deduction is more popular than induction. The use of several economic factors to compute territorial potentials also proved to be more popular

5. Several firms had more than one application.
TABLE 5

SPECIFIC APPROACHES TO THE ECONOMIC FACTOR METHOD, CLASSIFIED BY TYPE OF PRODUCT, EMPLOYED BY THE FIRMS STUDIED

<table>
<thead>
<tr>
<th>Type of Product</th>
<th>Approach Used</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Correlation</td>
<td>Judgment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Simple</td>
<td>Multiple</td>
<td>Total</td>
<td>Deductive</td>
<td>Inductive</td>
<td>Total</td>
<td></td>
</tr>
<tr>
<td>Industrial</td>
<td></td>
<td>4</td>
<td>2</td>
<td>6</td>
<td>11</td>
<td>5</td>
<td>16</td>
<td></td>
</tr>
<tr>
<td>Consumer</td>
<td></td>
<td>6</td>
<td>3</td>
<td>9</td>
<td>10</td>
<td>5</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>10</td>
<td>5</td>
<td>15</td>
<td>21</td>
<td>10</td>
<td>31</td>
<td></td>
</tr>
</tbody>
</table>
than the use of only a single factor. Several economic factors rather than a single factor were employed in twenty-two of the thirty-one judgment applications.

Correlation vs Judgment

It is appropriate to consider which approach -- correlation or judgment -- provides the best territorial market potentials. An unqualified answer cannot be provided, but it can be said that where conditions are favorable for the application of correlation, it appears advisable to utilize this approach in preference to judgment. The primary reason is that it has a greater theoretical accuracy. One has only to consider the difficulty in determining the relationships and interrelationships between various economic factors and a given market potential to appreciate the complexity of the problem. An astute observer can probably make reasonable estimates of these relationships by judgment, but it seems unwise to utilize this approach when correlation can provide more precise results. It also appears that from a theoretical standpoint multiple correlation will provide better results than simple correlation, since in most cases more than one economic factor affects the market potential.

Four of the firms included in this study had changed recently from the judgment to the correlation approach. These companies, through the use of published data for selected territories and area market surveys, made extensive checks on the accuracy of the
potentials obtained with both methods. The conclusion reached in all cases was that the correlation approach provided more accurate results. None of the firms studied had changed from the correlation approach to judgment. Five of the companies included in this study using judgment had recently investigated correlation, but decided to continue using judgment. All of these firms believed that the potentials obtained by using correlation were at least as accurate as those obtained by using judgment. It was rejected because in their opinions the results obtained were not significantly better, and this approach was more difficult to apply and understand. Although this field experience is limited, it serves to indicate that where the two approaches have been compared, correlation has provided equal or better results in all cases.

It is recognized that because of various conditions correlation cannot always be used. However, it is believed that in applying the economic factor method, the starting point, if possible, should be a correlation analysis of the available market and economic factor data.

Factors Limiting the Use of Correlation

The use of correlation to determine territorial market potentials is not a recent innovation, for this technique was employed for that purpose by Weld at Swift and Company as early as 1925.
Dr. Weld also commented in 1950 that experience to date with this approach was very encouraging, but that he found it strange that relatively few firms had tried it out. The results of this study indicate that in recent years many companies have investigated the use of correlation, but for a variety of reasons which are discussed in this section, it is not widely utilized by industry today. These reasons are classified under the general headings of lack of suitable data, the characteristics of the market, time and cost requirements, and the complexity of statistical correlation.

Lack of Suitable Data

Many firms cannot apply the correlation technique to compute territorial market potentials because they lack suitable sales and market potential data. One of the principal factors limiting its use is that in many cases regional market potential data are not available and the firm's sales cannot be used legitimately because the firm shows wide variations in territorial sales performance. This situation appears to be present to a greater degree in industrial markets than consumer markets. The use of the company's sales data when this condition is present is, of course, not legitimate and results in basic errors in the computed market potentials.

The principal problem in using correlation under this circumstance is that the economic factors which are correlated with the firm's sales generally ignore the weak spots in the firm's distribution and thus provide inaccurate market potentials. A case in point is the experience of one company whose distribution was weak with the chemical and automotive industries. The equation derived by correlating regional company sales with manufacturing employment vastly understated the potential in the large chemical centers such as Wilmington, Delaware, and the large automotive centers such as Detroit, Michigan. In another case, a consumer goods manufacturer which showed wide variations in territorial sales performance reported that this technique helped to select factors that were related to the market potential, but that the weighting of these factors was incorrect by a significant amount.

The lack of regional market potentials, regional company sales data, and accurate individual purchase data are also factors which restrict the use of statistical correlation. Regional market potentials are published for only a relatively small number of products and so this type of information is usually not available. Some firms cannot use this approach because they cannot secure their own sales data on a regional basis. For example, in several instances manufacturers sold through distributors and could not determine the exact geographic areas covered by their distributors. Companies are sometimes restricted in using individual purchase correlation because they cannot obtain accurate individual
purchase data from customers. This problem is illustrated by the experience of one consumer goods firm which reported that it could not obtain reliable individual purchase data because customers did not keep records of purchases and they could not recall accurately from memory the amounts purchased in any given month.

Characteristics of the Market

Several market characteristics found mostly in industrial markets also limit the successful use of correlation. Companies selling basic raw materials or selling components to original equipment manufacturers have difficulty in applying this technique. This conclusion is in agreement with the thinking of Weld, who felt that from a theoretical standpoint correlation would not be too good for the determination of market potentials for raw materials or for products sold to original equipment markets.\(^7\) The problem in these types of markets is that the customers are usually so dissimilar in their purchasing requirements that the regional buying situation cannot be described by correlation and published regional economic data. For example, one firm selling a basic raw material could not secure meaningful relationships between regional sales and regional industry production data because the amount of a given raw material used per unit of production by firms in the same basic industry varied by as much as 50 percent between firms, and the

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production data for all firms were lumped in the published regional production statistics. In another case, a firm selling components to original equipment manufacturers could not obtain usable correlations between sales and regional employment data for the machinery industry because the amount of this component used per employee by firms in the machinery industry varied as much as 600 percent between firms.

A market situation where products are purchased infrequently is also unfavorable for the use of this technique because the specific timing of purchases in various territories is difficult to explain with correlation and published regional economic data. For instance, a manufacturer of industrial equipment which can be purchased by customers at almost any time during a given five-year period indicated that because of the infrequent purchase of this equipment significant relationships between customers' purchases and supposedly related economic factors could not be determined.

Firms selling in markets where a relatively small number of large customers account for a large proportion of total purchases also have problems in using this approach. The small number of customers does not allow variations in purchasing between customers to be averaged out, and because the customers are large, any variation in purchasing even by a single customer affects the computed market potentials by a significant amount.
This approach is also difficult to apply when products are sold in one territory and then ultimately used in several territories. Under this condition, valid correlations cannot be computed between sales and economic factors because the independent factors for the various areas usually represent consumption and the sales for the various territories do not represent actual consumption. This problem is illustrated by the experience of a building products company which found that it could not obtain meaningful relationships between sales and construction employment because contracting firms normally purchased in a single large city and then used the products in an irregular pattern over a wide geographic area.

Thus, certain market characteristics definitely limit the application of the correlation approach. These characteristics are found mostly in raw material, industrial equipment, and machinery markets, although they are sometimes found in industrial supplies and consumer goods markets.

Time and Cost Requirements

A considerable amount of labor is involved in processing and computing correlations. For example, a five-variable multiple correlation for roughly 3,000 counties would require some 180,000 separate computations (additions, subtractions, or multiplications) just to develop the basic estimating equation. In addition, there would probably be an equal number of computations involved in selecting the final independent variables. These figures are
presented to indicate that, in most cases, a clerical staff, electric computing equipment, or an electronic computer are necessary for the application of this technique to compute territorial market potentials.

The majority of the firms included in this study indicated that time and cost requirements of correlation are considered only after the basic accuracy which can be expected is determined. If a greater degree of accuracy is expected from this approach, higher costs are not usually a limiting factor. In many cases, however, significantly better results cannot be obtained and so judgment is used since it is less costly and time consuming. For instance, one firm found that a high degree of accuracy could not be obtained with any method and that the judgment approach which was easier to apply than correlation produced about equal results.

The expense of conducting market surveys to collect basic data for individual purchase correlation sometimes limits experimentation with this approach. As a rule, however, cost is not the prime reason for rejecting this method. For example, one researcher indicated that this approach would probably be unsuccessful in his case for a number of reasons, but that he would be interested in experimenting if the costs were not so high. Thus, time and cost considerations restrict the widespread use of correlation by industry inasmuch as many firms expect to secure equal or better results more economically with other methods.
Complexity of Statistical Correlation

Writers on market potential generally mention the complexity of statistical correlation as an important limitation to the use of this technique by industry. By complexity, they mean that the method is too complex for most researchers to apply and too difficult for management to understand. This approach is more complex to apply than other methods of determining territorial market potential. However, most large companies and many smaller firms have individuals in their employ who are quite capable of using this technique. It is also true that management in many instances is not able to understand the mathematics of correlation. Competent researchers using this approach should be able to explain it in non-technical terms to the satisfaction of their managements. As a case in point, one researcher explains it by saying that his correlation studies indicate that three factors determine the market potential, and that factor A is weighted 50 percent, factor B 30 percent, and factor C 20 percent. This explanation is accepted completely by the firm's management. The greater complexity of correlation may limit certain smaller companies from using it, but it should not be a serious limitation for the majority of firms.

Thus, legitimate reasons exist for using methods other than correlation to compute territorial market potentials. However, it is important to conduct a thorough investigation to substantiate the legitimacy of the reasons before rejecting this approach in favor of some other method.
Use of the Customer Census

A review of the data collection procedures utilized by the firms studied employing the customer census provides an indication of industry practice. Fourteen of the sixteen companies included in this investigation employing the customer census used their own salesmen to collect the purchase data from customers. There is some argument over the advisability of using salesmen to secure this type of information. The following are the principal advantages and disadvantages:

Advantages

1. Salesmen can collect the required data while making routine sales calls; thus out of pocket costs are lower.
2. Salesmen know the customers so they have a better chance of obtaining the data than an individual who is not known.
3. Salesmen are more willing to accept the territorial market potentials if they have played a part in their determination.
4. Salesmen receive a forced market education in that they are required to review the purchases of each customer in their areas.

Disadvantages

1. Salesmen may be biased. For instance, they may not report the true figures if they show that a poor job is being done.
2. Collection of this type of information requires time that should be spent in selling.

3. Customers may not report the true figures because they fear sales pressure from the salesmen if they are not securing the majority of the business. In one case a purchasing agent told a salesmen that he received 50 percent of the business, but later told an independent interviewer that the salesman secured only 10 percent of the business.

4. Salesmen are not proficient in submitting written reports.

Most firms using the customer census recognize the above disadvantages; however, they believe that the advantages usually outweigh them, especially since many of the disadvantages are overcome by education and an adequate system of checks and controls.

The individual company's marketing research department and outside research agencies were not used widely by the firms studied to collect purchase data for the application of the customer census chiefly because of the high costs involved. Four of the sixteen firms surveyed using the customer census employed their research departments to collect these data. Only one company used an outside agency. It was recognized that company researchers or outside researchers are somewhat better at collecting purchase data than salesmen, but it is believed that the costs of using these individuals are higher and that the over-all results are not significantly better.
Fourteen of the sixteen companies using the customer census employed the personal interview technique because they believed that it is the best method of securing accurate data. Also, since company salesmen usually collect the data while making routine sales calls, the cost of personal interviews is not prohibitive. The telephone interview technique was not widely used by firms employing the customer census, although several firms utilized this technique successfully where the information to be obtained was not great in amount or detail. Because of the limited returns usually obtained, mail questionnaires were used infrequently to collect purchase data. However, mail questionnaires were employed by several firms to contact customers in remote geographic territories.

The companies included in this study employing the customer census pointed out that satisfactory results may not be secured during the first year that this method is utilized. Many problems are encountered and these are usually solved only over a period of time. For example, one firm found that the first year the method was employed several key customers were overlooked, and the company salesmen often reported incorrectly. These problems were overcome by studying the trade directories more carefully and by checking the reported data and asking salesmen to verify any information suspected of being in error. The company found that the results improved over the years and that after four years the computed market potentials were highly accurate. There is no general agreement
among the firms studied as to the time period required to secure the maximum degree of accuracy with this method, but estimates range from two to five years. Thus, one should not expect to achieve the maximum results obtainable with the customer census until it has been utilized for several years.

**Factors Limiting the Use of the Customer Census**

Several factors limit the successful application of the customer census for most types of consumer goods and for some types of industrial goods. Companies selling in markets with a large number of customers who are not contacted directly by the firm's salesmen have difficulty in applying this method. For example, it would not be feasible to survey all of the individual customers for bread to determine the amounts purchased. Most of the firms studied using this method contacted less than 10,000 customers; however, two of the companies contacted approximately 40,000 customers.

Firms selling in markets where customers do not maintain adequate records of purchases and cannot recall accurately from memory the amounts purchased also have difficulty in using the customer census. An illustration of this is the experience of a small appliance manufacturer which attempted to secure sales data from appliance retailers. The company found that most appliance retailers handled several brands of small appliances and they could recall which brand sold best, but they could not estimate accurately how many units of each brand were sold in the past.
quarter. A firm in the industrial market reported that the purchases of its products were lumped with other types of products by most companies in their internal records, and that purchasing agents provide very poor estimates of the actual amounts purchased in a given year.

This method is also limited in application where the desired purchase data reveal confidential operating details of the customer's business. Customers are usually reluctant to furnish data under these conditions because they do not wish to disclose this type of information to competitors. For instance, a component products company found that original equipment manufacturers would not reveal their purchases of the component products because these data indicated indirectly their levels of sales and production which was confidential information.

Thus, the above factors restrict most consumer goods companies and some industrial goods firms from applying the customer census.

Customer Census vs Economic Factor Method

It is also appropriate to consider whether the customer census or the economic factor method provides the best territorial market potentials. This question is difficult to answer, but it is believed that the customer census where conditions favor its application provides the more accurate market potentials. The chief reason is that with this method the actual purchase data are secured from the individual customers. This procedure allows for consideration of special situations existing in certain areas or with certain
customers which are always a problem in using the economic factor method. To be sure, collection and tabulation errors will be made in using the customer census, but in most cases these can be corrected over a period of time.

It should be pointed out that the customer census method is rarely in competition with the correlation approach-economic factor method in studying a particular market. This is because many of the factors favoring the application of one are decidedly unfavorable for the other and vice versa. For instance, a small number of large customers is favorable for the customer census and unfavorable for correlation. Thus, in most cases, they are complementary rather than competing methods of determining territorial market potentials.

Five of the firms included in this study had changed recently from the judgment approach-economic factor method to the customer census. These companies through the use of published market potential data available for certain territories checked the accuracy of the market potentials obtained with both methods. The conclusion reached in all cases was that the customer census provided more accurate territorial potentials than did judgment. None of the firms studied changed from the correlation approach-economic factor method to the customer census or from the customer census to the economic factor method. Three companies considered the customer census and rejected it in favor of the judgment approach-economic factor method. The reason in all cases was that in their opinion
equal results were secured with the judgment approach at far less cost. This field experience is limited, but it reveals that where the customer census and the judgment approach-economic factor method have been compared, the customer census has provided equal or better results in all cases.

Thus, it is recognized that the customer census probably cannot be used for most types of consumer goods and for some types of industrial goods. It is believed, however, that the investigation of its possible use should be the starting point in the determination of territorial potentials for industrial goods, especially if they are raw materials, heavy machinery and equipment, or components for original equipment.

Examination of Alternate Methods

Most of the companies surveyed maintained that they had examined several methods of determining territorial market potentials before selecting the one they were presently using. An evaluation of the practices of these firms is difficult because the selection of methods is often a matter of individual judgment. However, based on discussions with the individuals involved it is believed that in several cases the examination of alternate approaches was superficial. This was particularly true for several firms presently using the judgment approach-economic factor method. It also appears that more accurate potentials could probably be secured in several of these cases by the use of a different technique.
It is, therefore, important for researchers to examine carefully the various methods available before making a final selection. In some cases one may not select the best approach for various reasons. However, this fact should be recognized by the researcher and pointed out to management. It is hoped that this study will lead to improved industry practice in the selection of methods.

Conclusions

In conclusion, the method used to determine territorial market potentials will vary with the type of product, the data available, the market characteristics, and various other factors. The marketing researcher will have to evaluate each situation individually to determine which approach is best under the given conditions.

One will probably not be able to use the customer census for consumer applications. The correlation approach-economic factor method should be used in preference to the judgment approach since it possesses a greater theoretical accuracy and also appears to provide more accurate potentials in practice. It also appears that from a theoretical standpoint multiple correlation will provide more accurate results than simple correlation since in most cases more than one economic factor affects the market potential.

Market conditions favor the use of the customer census in computing territorial potentials for raw materials, heavy industrial equipment, and components for original equipment markets. The correlation approach-economic factor method and the customer census
should be investigated thoroughly in computing potentials for lighter industrial goods since both methods have been used successfully for this type of application.

A large number of firms will have to utilize the judgment approach-economic factor method because various conditions will not permit them to use the other methods. Usable potentials can be secured with this approach provided a scientific procedure is adopted.

It also appears that adequate attention is not always given to the evaluation of alternate techniques in selecting a method of computing territorial market potentials. In some of these cases, more accurate data can probably be secured with a different approach. It is, therefore, important for researchers to examine carefully the various methods available before making a selection for a particular application.
CHAPTER VI
VERIFICATION OF METHODS

The plan of this chapter is to discuss the need to verify methods of determining territorial market potentials, tests employed and the extent to which these tests are used by industry.

Need for Verification

Any method of determining territorial market potentials whether it be economic factor or customer census must be verified before the potentials computed from it are utilized for marketing planning and control purposes. This is necessary because methods which are apparently logical and correct in every detail often produce data which are far from accurate.

Several cases are cited from industry practice to illustrate the above conclusion. For example, one firm secured a multiple correlation coefficient of over / .8 between developed market potential and four economic factors for fifty geographic areas. The correlation equation was then used with regional factor data to compute market potentials for some 1,500 trading areas. This approach appeared to be sound especially since the degree of correlation secured was highly significant; however several tests proved that this method was unreliable in this particular situation. Another company used the judgment approach-economic factor method to establish a relationship between market potential and buying income which appeared to be logical from every viewpoint. However, various checks proved that the apparently logical relationship was not
correct in this instance, and that the specific judgment approach could not be used. In a third case, a firm took a census of its customers' purchases and then tabulated this information to compute territorial market potentials. The company assumed that the method was highly accurate because original data were collected from every customer. The verification procedure revealed that the customer census could not be employed in this market because the customers were unable to supply accurate purchase data. The company could probably have avoided this problem by conducting an exploratory study before taking the complete census.

Thus, the validity of a given approach cannot be judged by appearances, and the method utilized in a particular situation must be checked for accuracy before the market potentials computed from it can be used.

Verification Procedure

Verification tests are unlike measures of statistical accuracy such as the standard error of estimate of a correlation equation in that the expected percentage of error cannot be determined. These tests can only indicate the degree to which a given method is in agreement with other approaches and other sources of data. The assumption is made that if the potentials obtained with a method are in agreement with the potentials secured from other approaches then it is valid and can be used legitimately in practice.
Five basic tests are available to determine the accuracy of computed territorial market potentials: (1) comparisons with published total market potentials, (2) cross checks of individual customer data, (3) comparisons with published territorial potentials, (4) comparisons with area potentials obtained by market surveys, and (5) sales manager's opinions of the computed market potentials. These are discussed in the following sections.

Comparisons with Published Total Potentials

Firms sometimes check the accuracy of a specific method by comparing the total market potential computed by the method with a known total market potential usually available from trade association reports, trade publications, or government reports. This procedure cannot be used, of course, if the known total potential has been utilized in the original computations.

Several experiences are cited from industry practice to illustrate the use of this verification test. A manufacturer of feeds used the judgment approach-economic factor method to establish consumption rates of these feeds for various types of farm animals in several regions of the country. The accuracy of these rates and of the general approach was tested by making comparisons with total developed market potentials published by a government agency. These comparisons revealed that the computed total potential for all products was in close agreement with the published figure, but that the individual consumption rates were too high for some products and too low for others. This analysis
was particularly useful because it indicated the general direction of the adjustments which had to be made in the individual consumption rates.

A firm employing the correlation approach-economic factor method determined the validity of this general approach by comparing the computed total market potential with the total market potential computed by a trade publication. It was found that the firm's estimate amounted to approximately 80 percent of the trade publication's figure. The firm studied both methods of approach and concluded that its own estimate was somewhat low, and that the trade publication's figure was slightly high. With this information as background, several additional market studies were made for the purpose of improving the correlation formula.

Cross Checks of Individual Customer Data

This verification test is employed only where individual customer data are available; thus, it is used most frequently in connection with the customer census method. The usual procedure is to divide the customers into groups according to common characteristics and then to compare the purchases of individual customers within each group with various economic factors supposedly related to purchases. For example, in the industrial market plants are normally classified by industry and the purchases of individual plants within an industry are compared with employment, sales, production, electricity consumption or whatever other economic factor statistics are available. Economic data for individual customers are usually secured from the customers or from reports of
Standard and Poor Corporation or Dun and Bradstreet, Inc. The purpose of comparing purchases and factor data for customers in the same group is to detect sizeable variations in the basic purchasing pattern which may be caused by errors in the reported information. For instance, a paper mill with 1,000 employees which bought less of a product than most of the other mills which employed only 500 workers would be suspect. The significant variations are then checked by contacting the specific customers involved and asking them to verify the questionable items of information.

Several cases are cited to illustrate the use of this procedure by industry. One electrical manufacturer used this method to check the purchase data secured from electric utilities by its salesmen. The utilities were divided into three groups according to the percentage of growth experienced in electricity sales in the past year. The purchases of the product by each utility were divided by its number of meters. The purchases per meter for the individual utilities in each group were then analyzed, and utilities showing significant variations from the group average were contacted by the firm's marketing research department and asked to verify the purchase information. This technique was effective in eliminating many errors in the reported data.

A company selling a raw material also used this test to verify the purchase information obtained from individual customers. The
company employed product specialists on its headquarters staff who were supposedly familiar with the operations of the major customers for one particular product line. For example, the specialist for product X was intimately acquainted with the policies and operations of some 30 customers who accounted for over 50 percent of the potential of this product. The individual customer reports secured by a customer census were circulated among this group of product specialists. If a questionable item was discovered, the salesman calling on the account was asked to verify the data. The firm indicated that this approach was excellent for checking the purchases reported for major customers. However, the product specialists had little knowledge of the minor customers and so they could not check their purchases.

Comparisons with Published Territorial Potentials

One of the best tests of the validity of a given method is to compare the market potentials computed with it with the territorial potentials published by other sources. Published potentials by territory are often available from trade associations such as the National Electrical Manufacturers Association and the American Supply and Machinery Manufacturers Association, trade publications such as the American Machinist and Steel, various state and local government reports, and private organizations such as A. C. Nielsen Company which conduct store audits or sponsor consumer panels. Brand preference studies published by large newspapers such as the St. Louis Globe Democrat and the Milwaukee Journal are also often used for checking purposes.
Trade associations sometimes provide territorial potentials which can be used for verification. One firm in the industrial field obtained industry-reported data for a limited number of regions from its trade association. Market potentials were computed for each of these regions by using the firm's correlation formula and regional economic statistics. These potentials were compared with the published information. The two figures were in close agreement in the majority of the areas; however, in three areas, they varied by as much as 25 percent. The firm initiated market studies of those areas to determine the reasons for the deviations.

Trade publications are also an important source of published information. A manufacturer of feeds obtained market potentials by state for its products from a trade publication. These data were useful in checking the accuracy of product consumption rates developed for various regions of the country. The computed county potentials were tabulated to determine state potentials which were compared with the published statistics. These comparisons revealed that the company's potentials were lower than the published estimates in the South, higher than the published estimates in the East, and approximately the same as the published estimates in the other regions. The findings were, of course, most helpful in suggesting areas where the product consumption rates should be checked further.

Many of the newspapers in larger cities publish annual reports
of the relative brand position of various consumer products in their areas based on studies of a sample of consumers. Firms use these studies for checking purposes by comparing their computed market position in a given territory—which is determined by dividing company sales in the area by the area market potential—with their brand position published in the area study. Most of the companies surveyed agreed that many of these studies could be used for checking purposes, but they also indicated that the reports published by several newspapers were based on poor samples and could not be used. One firm in the food and beverage industry reported that about twenty of these analyses were found to be reliable, and these were used regularly. Another firm which employed this type of analysis to test computed market potentials indicated that it found close agreement between the two sets of data in most cases. Thus, newspaper studies are an important source of data for checking market potentials, but the specific methods of approach used by these organizations should be reviewed carefully before these reports are accepted for verification purposes.

Private research organizations, such as the A. C. Nielsen Company, also publish statistics which are used by many firms to verify their computed market potentials. Nielsen, for example, conducts store audits in a sample of retail stores to determine among other things the amounts sold of a large number of consumer products. By checking invoices, opening inventory, and closing inventory the store auditor determines the amount of each product
sold during a given time period. The figures are then projected to provide market potential estimates for a number of regions. These data are used by many firms for checking purposes. For example, one firm compared its computed market potentials with Nielsen's potentials for twelve market regions. The two figures did not differ by more than 3 percent for any region. Nielsen's estimates have sometimes been criticized because data for several large retail chains, notably The Great Atlantic and Pacific Tea Company, are not included; however, the majority of the consumer goods firms studied believed that they were generally reliable for large regions.

State and local government agencies sometimes publish statistics in connection with a licensing, tax, or regulatory function which are useful for checking territorial market potentials. For example, one firm obtained data from city building permit records on the amount and type of certain equipment installed in dwelling units during the past year. The firm's computed potentials were then compared with the published information. It was found that the two figures never varied by more than 8 percent. Several of the other firms studied also used government tax statistics and building permit data for verification purposes.

Comparisons with Market Survey Data

If published information is not available, area market studies are often conducted to determine market potentials which are used for verification. Surveys are also made to determine reasons for
variations between computed potentials and published data. Independent research organizations are sometimes employed to conduct market studies or to audit the method of computation, but in most cases this is done by the firm's research department. The high cost of area surveys usually prohibits their extensive use; thus they are employed primarily to supplement other verification tests.

The use of this technique by several firms is discussed for illustrative purposes. One firm which sells industrial products through distributors checked its potentials in 15 test areas by surveying all of the distributors located in these areas. The company's research personnel conducted the surveys using personal and telephone interviews. The distributors were asked how much of certain types of products they sold during the past year. In most cases the distributors were cooperative; however, several competitive distributors refused to reply and estimates were made for these firms based on salesmen's reports and Dun and Bradstreet Reports. The market potentials computed by the two methods were in reasonable agreement in all of the test areas. Based on these findings, the firm concluded that the general approach was valid.

Another firm in the industrial market checked its method by making market surveys in several different cities each year. The cities selected for analysis were ones where the accuracy of the computed potentials was questionable. The studies were made by the firm's research personnel who used the personal and telephone
interview techniques. The customers were classified by industry and a random sample of customers was selected from each industry group. All of the customers employing 500 or more workers were arbitrarily included. The sample purchase data were then projected on the basis of industry production and employment statistics to compute territorial market potentials. These studies were made by the firm for several years. Since a significant variation between the computed market potentials and the survey data was not discovered, the firm concluded that the over-all approach was generally reliable. The company believed that there was an advantage in studying a small number of cities each year because under this program the basic method was reviewed continuously and ample time was available to study the survey reports in detail.

A consumer goods firm employed an outside research organization to review its computation procedures and to check the results by making several territorial market studies. The company reported that the outside research firm contributed several new ideas, but that its principal contribution was to provide an impartial audit of the analyses which had been made by the firm's research personnel. In this case, the independent firm verified the company's belief that the approach used was basically reliable.

Sales Managers' Opinions

Many firms test their territorial market potentials by having regional sales managers review the information for their areas and render an opinion as to its accuracy. This approach is used because
these individuals are generally familiar with their areas and are capable of providing a good indication of the firm's position in the market. Some firms object to this approach because they believe that sales managers cannot be objective in their appraisals since their sales performance is normally measured by using the computed potentials.

A second reason for using this test is that the potential information is prepared for use in regional sales planning and control, and, if the regional managers do not believe that it is correct, they will not utilize it for this purpose. Most of the firms studied emphasized that if the field sales personnel do not accept these figures, then there is little value in computing them. Thus, it appears to be good practice to secure sales managers' opinions on the accuracy of computed market potentials. These opinions are valuable even if it is believed that they are not reliable for verification purposes because they will indicate the particular managers who question the validity of the data. The researcher can then meet with these individuals to discuss their objections. Many times objections are raised because of a lack of understanding of the method used. In other instances it is necessary to make area market studies to verify the potentials for certain areas. But in all cases, it is believed that the researcher should thoroughly investigate sales managers' objections to the data before releasing them for publication.
Several cases are cited from industry practice to illustrate the effective use of this verification technique. One firm which used the customer census asked its sales managers to review the individual customer reports before they were published. The firm indicated that with this procedure the final market potentials were fully accepted by all of the parties concerned. A firm which used the judgment approach-economic factor method asked the district sales managers to review the market potentials for those areas within their districts before they were released in published form. The district managers, in turn, asked regional sales managers to comment on the data for their areas. The research staff then met with the district managers and a course of action was determined to verify any questionable information. In some instances area market surveys were conducted. With this procedure, the final published figures were accepted as reliable by both district sales managers and headquarters personnel, and could be used as a common basis for regional marketing planning and control.

Review of Practices

The firms included in this investigation recognized that methods of determining territorial market potentials must be verified before they can be utilized in practice. Most of these firms employed one or more of the tests described in the preceding sections. The method of testing used in a particular situation was dependent upon the need for verification, the type of market, the firm's facilities, and the amount of published data available. For example, one firm
did not make an extensive analysis because the relationship between automobile registrations and market potential which it used was well-established. In another instance, the relationship between market potential and certain economic factors was questionable, and the firm was required to conduct several tests with published market potentials. A third firm also required extensive verification of its method, but published information was not available and area market studies were made.

The majority of the companies studied found that adequate published data usually were not available and territorial market surveys were required to test the accuracy of computed market potentials. These were normally conducted one or two at a time over a period of years because the firms did not have the financial resources to undertake an extensive program of market studies. This procedure is, of course, not desirable since the method is being verified while the computed potentials, which may be in error, are used in practice. Company researchers recognized this limitation, but there was little that they could do about it in most cases.

Thus, most of the firms studied checked their methods of determining territorial market potentials with one or more of these tests; however, because of the lack of published data and the high costs of market surveys, the verification was generally accomplished over a period of years.
CHAPTER VII

CASES STUDIES OF METHODS

This chapter is devoted to the presentation of several case studies of each method of determining territorial market potentials discussed in Chapter V. The sections are divided by approach and by type of good for easy reference. It is hoped that this material will enable the reader to obtain a better understanding of these techniques and also to appreciate some of the problems involved in their application to specific business situations.

Economic Factor Method

Correlation Approach - Industrial

**General Electric Company.** The approach used by General Electric's Construction Materials Division is an example of the territorial correlation of a firm's sales with a specially constructed composite market factor. This Division is engaged in the wiring materials business, which includes conduit, wire, cable, and all sorts of wiring devices. Business is done entirely through electrical wholesalers which, in turn, sell these products primarily to electrical contractors. The Division has divided the United States into logical economic territories surrounding 108 wholesale centers. These trading areas, which are defined by county, were the territorial units used.
Many market factors were considered as a possible basis for correlation, but it was finally decided that the following two should be used:

1. The number of electricians installing wiring materials in each wholesale area.
2. The income available to finance construction in each wholesale area.

The electrical employment data were obtained from the Social Security Administration and the National Electrical Contractors Association. The income statistics were obtained from Sales Management magazine.

The two independent variables were combined into a composite market factor with people engaged in electrical contracting weighted 70 percent and disposable income weighted 30 percent. These weights were decided upon by comparing the correlation coefficients obtained with various combinations of the two variables. The composite market factor was correlated with the firm's sales for the 108 wholesale trading areas and a coefficient of \( r = .94 \) was secured.

All data were converted to a percentage basis before making any computations. The derived estimating equation was then used with territorial factor data to compute market potentials for each of the 108 wholesale trading areas. A penetration index was computed for each area by dividing the sales in the area expressed as a
percentage of total sales by the market potential percentage. For example, if Chicago accounted for 4.5 percent of total sales and its market potential percentage was 5.0 percent, the penetration index was 90 percent.

Since the top twelve areas accounted for 36 percent of sales, the analyst recognized that including them in the correlation analysis had a biasing effect on the measures of relationship. The reason for this bias was that a large portion of the total variation in both sales and the market factor was associated with the twelve large areas; thus, the correlation coefficient was correspondingly high. The analyst, therefore, computed a separate coefficient of correlation for the 96 smaller areas. This amounted to \( r = .82 \) which was not as high as the one obtained for all areas, but was still high enough to indicate that the basic approach was appropriate.

A home heating apparatus manufacturer. The method used by this company was based on territorial correlation of developed market potential with a ready-made composite index. The basic product of the company is a line of home heating apparatus which it markets nationally through heating and ventilating distributors. The market includes units for new homes and replacement units for older homes. A trade association reports total developed market potential by state; thus, the problem was to allocate the known state figures to county units. The county data were then combined to secure potentials for each of the firm's territories which are defined by county.
An investigation of possible data sources revealed that many large cities kept untabulated records of heating installations. It was decided to collect these statistics as the starting point in the analysis. The territorial potentials derived from these figures were highly accurate, but the method of obtaining them was not satisfactory because large amounts of clerical labor were required and the basic information was available only for large cities.

The next step was to compare the tabulated statistics with various economic factors to see if any relationships were evident. These comparisons were made separately for each state except, in some cases, where several states were combined. A good correlation was found between Sales Management's "Buying Power Index" and number of home heating installations.

The known potential for each state was then allocated to county units according to the percentage of the state's "Buying Power Index" listed for each county. The assumption was made that the relationship which was true for the large cities was also true for smaller geographic areas. The territorial potentials computed with this method in subsequent years were checked by comparing them with home heating tabulations for a sample of large cities. In all cases, the computed figures were within 8 percent of the actual values, indicating that this method was fairly reliable for large cities. No checks were made in the smaller territories.
An industrial products manufacturer. The method used by this manufacturer is an example of the correlation of purchase data and a single independent factor for a sample of individual manufacturing plants. The products involved are used in most types of manufacturing plants and are sold nationally through direct salesmen and wholesale distributors. The firm wished to obtain market potentials for some 350 territories which were defined by county units.

The individual purchase and factor data were obtained largely through market surveys, although the firm's sales records were utilized in those cases where customers were known to have purchased all of their requirements from the firm. An analysis by industry revealed that there was a good basic relationship between plant employment and purchases within a single industry. This analysis also indicated that an operating plant purchased a certain quantity of these products just because the plant was in operation. After combining several basic industry groups which showed close relationships in the amount purchased per employee, about ten major industry groups remained. The correlations between purchases and employment for these ten groups ranged from approximately 0.6 to 0.9.

The correlation equations were used to determine purchase factors per plant and per employee for each of the ten industry groups. For instance, for the chemical industry the purchase rate was $2.00 per plant and $.50 per employee. These rates were
then applied to county data on number of plants and total employment by industry found in County Business Patterns to compute county potentials, e.g., chemical industry, County A, 2,000 plants x $2.00 = $4,000; 20,000 employees x $.50 = $10,000; total for the chemical industry in County A = $14,000. The derived data for each county were then combined to compute potentials for each of the company's 350 territories.

Several checks were made to determine the accuracy of this approach. First, the total market potential for the United States, which was determined by using other sources, was compared with the total figure computed by the correlation formula. The two estimates were found to be in close agreement. Second, territorial market surveys were conducted in several areas and the market potentials computed in these surveys were checked against the figures computed with the correlation formula. These checks revealed that there were several discrepancies in the basic formula, but that the method was valid. The general observation was also made that the larger the area being measured, the less the percentage of discrepancy in the potentials computed with the correlation formula.

The use in this project of the Standard Industrial Classification Manual prepared by the Bureau of the Budget is worthy of mention. The manual was used in this case to classify the firms in the sample by industry so that the data could be related to published government statistics on manufacturing employment and number of plants. For example, if ten firms in the sample were
classified as belonging to the Textile Mill Products Group, the researcher related the sample purchase data to published government employment statistics for this group.

One problem encountered in applying this method was that the basic purchase information collected for industrial plants was sometimes inconsistent with purchase information for other plants in the same industry. For instance, most of the establishments in the steel industry reported purchases per employee within a range of $7.00 to $7.50, but Company A reported $2.50. In these cases, the non-conforming firms were eliminated from the sample on the assumption that the variation was due to an error in reporting or classification. This approach could have injected basic errors into the method, but it appeared to be the only course which could be followed.

An electrical manufacturer in the industrial goods field. The method used by this company is an example of the multiple correlation of purchases with several economic factors for a sample of customers. This company markets its products nationally to electrical contractors through electrical wholesale distributors. The firm desired market potentials for each of some 300 industrial trading areas which are defined by county units.

The analyst determined that these electrical products were installed only by electricians and that the amount installed by a given electrician was dependent upon the type of construction project on which he was working. It was generally known that larger
amounts of these products were used in industrial construction than commercial construction, and that larger amounts were used in commercial construction than residential construction. The exact relationships between these various types of construction were not known. With this deductive analysis as background, the researcher collected basic market data from electrical contractors in an effort to develop some quantitative expression of these relationships.

A sample of electrical contractors was contacted to determine their purchases of these products and their type of work. They were asked to indicate their type of work on a percentage basis by industrial, residential, and commercial. Since the contractors normally employed a number of electricians, all purchase information was placed on a per electrician basis. Purchases per electrician were correlated with percentage industrial, percentage commercial, and percentage residential construction worked on, e.g., purchases per electrician $700; type of work: 50 percent industrial, 40 percent commercial, and 10 percent residential. The correlation was reasonably high. The published construction expenditures for each territory were then reduced to percentage industrial, commercial, and residential, and the multiple correlation estimating equation was applied to compute a purchase factor per electrician for each territory in dollars. For instance, in Cuyahoga County, Ohio, it was $400, and in Franklin County, Ohio, it was $300. The purchase rate indicated the average amount of the electrical product
that was installed per electrician in each area based on the type of construction being done in the area. The basic rate for each territory was then multiplied by the number of electricians employed in that territory to determine the potentials for the 300 trading areas.

The method was checked in several territories by comparing the computed potentials with estimates obtained by taking a complete market census. The figures secured by the two methods were in close agreement in most cases.

**Correlation Approach - Consumer**

A manufacturer of beer. The method employed by this firm is an example of territorial correlation of the firm's sales with a single external market factor. This company markets beer nationally through wholesale distributors and retailers. Total developed market potential for each state is available from a published report. The firm required county data for planning and control purposes; thus, the problem was to allocate the known potential for each state to county units.

Several methods were tried including multiple correlation, but it was finally decided that simple correlation with a single external market factor was the best approach available. The single variable used was adult population. This factor was selected because it showed a higher correlation with the firm's sales by county than population, personal income or any other economic series tried. The known potential for each state was then allocated to county units.
based on the percentage of the state adult population residing in each county. This yielded individual county potentials for beer. The firm secured data on adult population by combining Sales Management's population estimates by county with published Census statistics on age distributions.

The firm checked the market potentials computed by this method against published information for certain areas and against estimates derived from area market surveys. The general conclusion was that the method was not perfect, but that it did provide reasonably accurate data which were satisfactory for the firm's present needs. The analyst believed that one of the elements contributing to the success of this method was the fact that regional variations in consumption did not have to be explained by the estimating equation since separate correlations were computed for each state. Another contributing factor was that the firm obtained a fairly stable percentage of the market within a single state and, thus, its sales could be used for correlation purposes.

A food manufacturer. This firm's method is an example of territorial correlation of the firm's sales with a single market factor where the final results are modified by judgment. This company markets a meat product nationally to consumers. No regional market potentials are available, but a national total figure is published.

Extensive correlation analyses of the firm's sales and various economic series were made. Based on these studies, it was decided
that population was the key market factor. The firm believed that the demand for its products is so basic that where there are people there will also be sales of these products in proportionate amounts. Admittedly, other items influence the sales of these products, but, in the firm's opinion, these are not significant. Other analyses also indicated that the accuracy of the computed potentials was improved very little by the use of additional factors; thus, the costs incurred in studying them could not be justified.

Population data by county were obtained from Sales Management and the firm's sales by county were placed on a per capita basis. The per capita sales in each territory were then compared with the previous year's per capita sales in that territory and with per capita sales in other territories. Before any comparisons were made, however, the sales figures for certain territories were adjusted based on researcher judgment. The type of adjustment required was not handled through the use of an additional market factor because it usually involved local conditions in a single or several territories. For example, a customer with headquarters in Atlanta purchased large quantities for delivery to Atlanta, but subsequently distributed the products to its outlets throughout the state of Georgia and in parts of Florida. The effect of this procedure was to inflate per capita sales in Atlanta and deflate per capita sales in the other areas. The researcher for the firm adjusted for this condition by allocating this customer's purchases
to the various territories based on his knowledge of the customer's regional operations. The company believed that adjustments of this type were necessary if they were to make legitimate comparisons between territories. The only method that they were able to use successfully for this type of adjustment was judgment based on their knowledge of the specific situation.

A consumer non-durable goods manufacturer. The approach used by one consumer non-durable goods manufacturer is an example of territorial multiple correlation of the firm's sales with several economic factors. The specific products in question are classified under the general heading of convenience goods. The firm markets these products nationally through a network of distributors and retailers. Market potentials were normally required for each of the company's 35 districts; however, additional figures were sometimes computed for states, trading areas, or counties, if a particular need arose.

Many economic series were considered as possible candidates for use in the estimating equation, but the field was finally narrowed to four factors which showed an excellent relationship with the firm's sales. The most important one was retail sales which had a simple correlation of \( r = 0.88 \) with the company's sales. Two of the other variables included were relative per capita income which is per capita income taken as a percentage of the United States average, and relative percentage city population which is percentage city population taken as a percentage of the United States average. The
fourth factor used is confidential. The company sales and retail sales for each district were expressed as a percentage of the United States total; thus, all data for the correlations were in percentage form. The percentages were converted to logarithms before any computations were made. Electronic computing equipment was used for many of the computations. The four variables had a multiple correlation of $r = .96$ with company sales. The correlation equation was used together with regional factor data to determine market potentials in percentage form for each district. These percentages were then multiplied by the United States developed market potential stated in dollars to determine dollar figures for each district. The company's percentage of attainment of each district's market potential was also computed.

The fact that the firm used only 35 areas for the computations contributed to the high correlation coefficient since many of the variations in the smaller areas were averaged out by this process. The computed data were checked by individual market surveys and by audits conducted by private research organizations. The district estimates computed in these surveys and audits never differed from the district figures computed with the correlation formula by more than 5 percent; however, substantially larger deviations were recorded in smaller territories such as trading areas or counties. Based on the results of these studies over a period of years, the firm concluded that the basic formula was highly accurate in estimating district potentials and reasonably accurate in providing data for
areas smaller than a district. The analyst also commented that the general stability of the product line and its wide usage by all classes of consumers contributed a great deal to the successful application of the technique in this case.

A drug products manufacturer. The method employed by this firm is an example of multiple correlation of the firm's sales with several economic factors. This company markets a line of drug products which are used primarily by babies. The products are sold through drug wholesalers who, in turn, sell to drug retailers, dispensing physicians, and hospitals. A total developed market potential is determined by the firm through an analysis of published data and competitive reports. Since all sales are made through drug wholesalers who cover wide territories, the firm's sales can be determined only for 12 large regions in the United States. The company required potentials for these 12 regions and also for the smaller individual territories covered by its promotional salesmen.

The firm tabulated its sales for the 12 regions for a two-year period so that a total of 24 sales observations were used in the correlation procedure. Several economic series were compared with these sales data through the use of scatter diagrams. It was determined that three factors offered the best over-all relationship with sales. These were number of hospital births, estimated buying income, and number of licensed obstetricians. The number of births was obtained from a governmental agency and the income statistics were secured from Sales Management magazine. The number of licensed
obstetricians was not available in published form. The firm collected these data through the use of its salesmen. The multiple correlation coefficient obtained for these three factors and the firm's sales was $f .95$.

The correlation equation was applied to compute the relative importance of each of the three independent variables in determining the market potential. These relative weights and the territorial factor data were then used to compute a weighted percentage potential for each area. The analyst believed that the use of this approach rather than the correlation equation enabled the research department to explain more clearly the computation system to the firm's sales personnel, and thus to gain better acceptance of the derived information and market measurements.

The computed market potentials were checked by the firm through the use of Nielsen reports, spot market surveys, and market audits made by the firm's regional sales managers. These checks revealed that there were some discrepancies in the computed figures but that the correlation equation provided reasonably accurate potentials. Two of the elements contributing to the success of the method in the opinion of the analyst were the firm's wide distribution of its products and its relatively uniform percentage of the market in each region.

Judgment Approach - Industrial

**Crane Company.** The Crane Company used the judgment approach to compute developed market potentials for 150 sales territories which
are defined by county units. Crane markets a line of valves and fittings to the industrial market for maintenance and repair, original equipment and new construction. The firm determined by deductive analysis that one economic series was related to the maintenance and repair and original equipment segments of the market, and a second economic series was related to the new construction segment of the market.

It was determined that the "Crane Industrialization Factor" was related to the original equipment and maintenance and repair markets. This factor showed the total amount of industrial employment in each county in the United States expressed as a percentage of total United States industrial employment and weighted by industry according to the relative value of each industry group as a market for the Crane Company. For example, the "Crane Industrialization Factor" for County A was 1.2 percent which meant that County A accounted for 1.2 percent of the market potential in the original equipment and maintenance and repair segments of the market.

The employment statistics for the "Crane Industrialization Factor" were secured from *Sales Management*, *County Business Patterns* and the *Census of Manufactures*. In using employment data, the firm assumed that the purchases by a given industry in a given area were directly proportional to the number of workers employed in that industry in that area. For example, if County A accounted for 5 percent of the workers in the food industry, it would also account for 5 percent of the valves and fittings purchased by the food industry.
Relative industry weights were determined for 20 different industries by reviewing Crane's sales to these industries and estimating Crane's market position with these industries relative to their total position with all industries. For example, if Crane's over-all percentage of the market potential was 15 percent and 2 percent of Crane's sales went to the textile industry where Crane obtained an estimated 10 percent of the market, the weight for the textile industry was $2 \times \frac{15}{10} = 3$. If 6 percent of Crane's sales went to the steel industry where Crane obtained an estimated 20 percent of the market, the weight for the steel industry was $6 \times \frac{15}{20} = 4$. These relative weights for the 20 industry groups were then applied to county employment statistics by industry to determine a "Crane Industrialization Factor" for each county in the United States.

The firm employed a somewhat different approach to compute territorial potentials for valves and fittings used in new construction. It was determined that some types of construction provided a ready market for valves and fittings while other types of construction provided no market. Furthermore, it appeared that where valves and fittings were used in construction, they were purchased in proportion to the value of the building, e.g., a $1$ million building required half as many as a $2$ million building. Crane instructed F. W. Dodge to prepare a special report for them showing the dollar value of construction awards by county for those types of construction where valves and fittings were used.
The general assumption was made that Crane's market potential in new construction was directly proportional to new construction awards as shown by this report. The Dodge statistics for each county, expressed as a percentage of the United States total, were then averaged with the "Crane Industrialization Factor" for each county to compute Crane's potential in percentage form for each county in the United States. In this analysis, new construction and the "Crane Industrialization Factor" were assigned weights which were determined by estimating the relative total size of each of these markets.

The Crane Company has used this approach for about nine years. It is an excellent example of the application of judgment to a rather complicated market situation. The firm believes that the method has worked out very well in the past and they plan to continue using it in the future. Crane has conducted market audits in various territories over a period of years. The market potentials determined in these audits always compared favorably with the estimates computed by the judgment approach. The acceptance of this method by the firm's sales managers and sales personnel is also regarded by the market analyst as an indication of its validity.

York Corporation. The method used by York Corporation to compute market potentials by territory for industrial air conditioning equipment is another example of the use of judgment in the
industrial goods field. York wished to obtain a dollar potential for industrial air conditioning equipment for each county in the United States. These county data could then be combined into any other types of geographic units that were required.

The problem was approached from a mathematical standpoint, and through an inductive and deductive analysis of the air conditioning market the following statistical formula was derived to compute territorial market potentials for industrial air conditioning equipment:

\[ P = \frac{a (A) + b (V) + c (Q + R + B)}{X + Y + Z} \]

where:

- \( P \) = Annual market potential for any area in dollars.
- \( P \) is known for the United States as a whole, and the problem is to allocate total \( P \) to territorial units.

The letter \( Q \) in the above formula represents a combination of many general economic factors which affect the market for industrial air conditioning equipment. The formula for \( Q \) is:

\[ Q = \frac{RS + DI + M + W + C}{RS + DI + M + W + C} \]

- \( RS \) = total retail sales in dollars.
- \( DI \) = disposable income of individuals in dollars.
- \( M \) = total manufactures, value added, in dollars.
- \( W \) = total wholesale sales in dollars.
- \( C \) = total value of new construction, value put in place, in dollars.
- \( \xi \) = total U.S. value.
The letters V, R, and B in the basic formula represent factors which influence specific segments of the industrial air conditioning business. V is volume of cold storage space in cubic feet, R is number of hotel rooms, and B represents number of hospital beds. The symbol \( \gamma \) and the letter X in the basic formula refer to the climatic factor as it specifically affects the industrial air conditioning business.

The letters a, b, and c in the basic formula are constant multipliers which are used to convert the factor data to dollars of market potential. For example, the value of Q for any area will always be a percentage or fraction and the constant is used as a multiplier to convert this percentage to dollars. The determination of these is probably the most difficult and the most important element in the derivation of the statistical formula. These constant multipliers are confidential.

This approach was first applied by York in 1949 and considerable testing of ideas and assumptions preceded its adoption. The firm recognizes that this approach is not perfect and that accuracy can be improved with the availability of more and better facts to use in deriving the basic computation formula. Nevertheless, the analyst believes that the method utilizes a basically sound mathematical approach, and that the market potentials computed with it are accurate within 5 percent to 10 percent.
A manufacturer selling products to farms. This company employed judgment to compute territorial market potentials for a line of products which are used in the raising of livestock and poultry. The products are sold through independent dealers to farmers throughout the United States. County potentials for the products, in units, were required.

Livestock and poultry population data were available for each county in the United States from the Census of Agriculture. Population estimates for non-census years were published by several trade magazines. The analyst determined the annual consumption of each of the various types of products sold by the firm, for each type of farm livestock and poultry, for each region of the United States, e.g., laying hens in Maryland, 12 bags of product X per hen per year; beef cattle in Illinois, 75 bags of product Y per cow per year. Individual consumption factors had to be developed for various regions of the country because there were important sectional differences in consumption habits. An illustration of this is the situation in Illinois where farmers, because of certain conditions, used less of product Y per cow than the farmers in the South. These individual consumption factors were determined by the analysis of data secured from trade journals, salesmen's reports and regional market studies.

The various consumption factors were then applied to the published county livestock and poultry population statistics to compute county market potentials for each of the firm's products. For
instance, County A, population 800 beef cattle x 100 bags product Y = 80,000 bags, plus 4,000 laying hens x 10 bags product X = 40,000 bags; total potential County A, 120,000 bags. The computed data were checked against industry-reported figures which were available for the United States and for certain individual states. In most cases, the computed estimates were found to be fairly accurate. One of the sources of error mentioned by the analyst was that consumption rates for some areas were based on salesmen's reports for that area which were in error. This was being overcome by surveying and studying individually those regions where the rates were thought to be incorrect. Over-all, however, the firm believes that this method provides territorial potentials which are satisfactory for planning and control purposes.

A manufacturer selling construction products. This manufacturer used a judgment approach to determine potentials by territory for a product used in new construction, and sold nationally to the building trades through building products wholesalers. Data were required for each of the firm's sales territories which are defined by county units. Total United States developed market potential was not available.

The firm approached this problem by securing a sample of engineering drawings and specifications for each major class of building construction from F. W. Dodge. The dollar value of the building, the square footage, and the dollar value of the type of products sold by firm were determined for each of these construction
projects. The dollar value of the type of products sold by the firm was computed by pricing the general type of products listed in the engineering specifications. By analyzing these data, the firm was able to compute an average purchase rate per square foot of construction for its type of products for each major class of construction, e.g., office buildings $2 per square foot, churches $1 per square foot. It was discovered that for several classes of buildings a general purchase factor which applied to all areas could not be determined because of regional differences in methods of construction and the types of products used. In these cases, the analyst computed regional purchase rates based on his knowledge of construction practices in various regions of the country.

The individual purchase factors were then applied to county data on the square footage of new construction awards by class of building, which were available from F. W. Dodge, to compute county market potentials. These were combined to determine potentials for each of the company's sales territories. Various checks on the accuracy of the computed figures indicated that the method was reasonably accurate when applied on an annual basis, but not too valid when used for shorter periods of time.

**Bryant Chucking Grinder Company.** The method used by this firm to determine potentials by territory for its line of machine tools is another example of the application of judgment in the industrial market. Market potentials expressed as a percentage of the United States total were required for states and industrial trading areas.
The territorial data were determined in this case by identifying the industries which used Bryant's types of machine tools, establishing a relative weight for each industry indicating its importance as a market for Bryant's products and applying these weights to manufacturing employment statistics by industry which were published for states and industrial trading areas by Iron Age magazine. The relative weights were determined by the combined judgment of company executives in the sales, engineering, and research departments who attempted to visualize the requirements of the various industries, and then establish their relative importance as markets. In making this analysis, these individuals studied such factors as the relation of plant size and capital expenditures to the purchase of new machine tools; the number, type, and age distribution of the machine tools now in place in various industries; and the replacement policies of certain key customers. Separate industry weights were established for each of the two major types of machine tools manufactured by Bryant. These were used together with the published employment statistics to compute market potentials for each of the first 48 states and for each of Iron Age's industrial trading areas.

The territorial estimates computed by this method were used with extreme caution because of the nature of the product and the market. One of the elements limiting the use of the computed data was the cyclical nature of the machine tool industry. Other limiting factors were the small number of product units sold and the small
number of customers. For instance, one of Bryant's customers ac-
counted for over 27 percent of total sales in one year. Because
of these factors, the computed figures were used only as guideposts
over a period of one or two years, and measures of Bryant's terri-
torial sales effectiveness were made only for periods of several
years. In spite of these limitations and the impossibility of
attaining absolute accuracy in the machine tool field, Bryant still
believed that the market potentials computed with this method were
a highly useful management tool.

**Judgment Approach - Consumer Goods**

An insurance company. The method used by this company to compute
territorial potentials for automobile insurance is an example of
the application of the judgment approach to consumer goods. The
firm expected a high degree of accuracy with this approach because
excellent basic data were available. Automobile registrations by
county were published by the various State Bureaus of Motor Vehicles.
Territorial market potentials were determined by subtracting non-
insured registrations and non-insurable registrations according to
company policy from the published county registration information.

Estimates of non-insured registrations for each state, which
usually amounted to approximately 5 percent of total vehicles, were
made by the State Bureaus of Motor Vehicles. The company adopted
these estimates for each state and allocated them to county units
in direct proportion to the number of registered vehicles listed for
each county. It was recognized that this procedure was not valid in some cases; however, only 5 percent of the total market was involved, and it was believed that any errors caused by this procedure were not significant.

The second adjustment made was for those risks which were not insurable according to company policy. The actual underwriting policies of the firm were not revealed, but examples of possible limitations are that non-white drivers or persons under 21 years of age are not sold insurance. The firm adjusted for non-insurable risks by estimating the total number of such risks for each state and then allocating this estimate to county units according to published statistics on a related market factor. For example, if non-whites were not insurable, and it was estimated that 40,000 registrations in the state were held by non-whites, this estimate might be allocated to county units on the basis of published county data or non-white population. In most states, the non-insurable risks were a relatively small percentage of total registrations.

Market potentials were usually computed for county units, but in several cases they were required for units smaller than a county, e.g., Franklin County, Ohio, was divided into several territories. This created a problem because automobile registrations were not available for geographic units smaller than a county. In these situations, the county registration figures were allocated to territorial units in proportion to the weighted population of the territorial unit. Government Census Tracts and population statistics
were used for this procedure. The weighting factor for each territory was determined by a deductive analysis of the market characteristics of the area. For instance, a high income area was more heavily weighted than a low income area. The potentials computed by this method proved to be fairly accurate, but not as accurate as the county data.

The firm has used this method to determine territorial market potentials for several years. Although extensive checks have not been made, the analyst believes that the figures computed with it are probably accurate within 5 percent. He also concludes that a high degree of accuracy is insured by the excellent basic information, and that even by pure guesswork he could make estimates which are accurate within 15 percent to 20 percent, since in most cases the potential for an area is between 80 percent and 95 percent of total registrations.

A manufacturer of washing powders. This company employed judgment to compute territorial market potentials for a line of washing powders which are used primarily with automatic washers. The firm determined through a deductive analysis of the market situation that the automatic washer population of any area was the most important factor influencing the potential of these products. Data on the number of automatic washers sold annually by county were available from a trade association. Several published studies were also available from a private source which indicated the washer replacement policy followed by home owners. The county washer
sales for past years together with the studies on replacement policy were used to estimate automatic washer population by county. The washer populations for the various counties expressed as a percentage of the United States total were then used as the county market potentials for the line of washing powders. The firm checked these figures for several areas against available published information and found that they were in relatively close agreement in most cases.

It was recognized that owners of automatic washers use different amounts of washing powder, and that factors such as family size, age, income, and type of employment probably affect this market; however, no satisfactory relationships between market potential and these variables could be determined. The firm also learned that the above factors, although important, averaged out fairly well in most areas, and, therefore, their omission from the analysis probably did not affect significantly the accuracy of the computed figures.

A firm selling general merchandise through retail outlets. This company markets a broad line of general merchandise through retail outlets located throughout the United States. Market potentials are determined for each of the metropolitan areas served. The firm makes use of the retail sales data published for eleven categories of sales by the Bureau of the Census to compute territorial potentials. Deductive analysis is used to determine what percentage, if any, of each of the eleven categories of sales is competitive. This percentage varies with the type of merchandise involved, e.g., the
firm is competitive with only a relatively small percentage of the
building and lumber trades sales, while it is competitive with a
very high percentage of the sales in several other categories.
The sales which are competitive are in turn classified as durable
or non-durable, and the firm then measures its over-all position
in these two categories.

In census years, census statistics for the eleven categories
of sales are available for each metropolitan area and the same type
of deductive analysis is used to determine market potentials for
each of the metropolitan areas served. In non-census years, the
figure for each territory is estimated by using Sales Management's
retail sales data for each area and the known past relationships
between total retail sales and general merchandise sales for each
area. The firm believes that this method is reasonably accurate
and that it provides territorial estimates which are quite satis­
factory for measuring market position.

An apparel products manufacturer. This company used judgment
to compute potentials for some 1,700 trading areas for a basic
item of apparel which is sold widely through retail outlets. Total
United States developed market potential for these products is
available from a trade association.

The firm used deductive analysis to determine that the market
for these products was related to disposable income and population.
This analysis also indicated that Sales Management's balanced
"Buying Power Index" which is weighted 50 percent income, 30 percent
retail sales, and 20 percent population was the most appropriate market factor available. The "Buying Power Index" was, therefore, used to compute territorial figures; however, the analyst soon discovered that when this index was applied on a national basis that the income factor was weighted too heavily, and that potentials were overstated in high income regions and understated in low income regions. This situation was remedied by allocating the national market potential to states according to published data on general merchandise sales, and then allocating the state figure to trading areas according to the balanced "Buying Power Index." This approach was checked and found to be much more accurate than the simple application of the "Buying Power Index."

One of the firm's major problems is the continually changing relationship between income and market potential. It appears that income is becoming less important in this market and that population is becoming more important. The analyst theorized that generally rising individual incomes probably accounted for this development. The company has reviewed the various consumer expenditure studies which have been published in an effort to determine exact relationships between income, population, and potential, but it has been unsuccessful in uncovering any definite patterns. Thus, the analyst believes that the judgment method, although not perfect, is reasonably accurate and is the best method available to the company.
A food and beverage manufacturer. This firm markets its products nationally through wholesale distributors and retailers. State developed market potentials are published. The problem was to allocate the known state figures to county units.

An analysis of the market situation revealed that the market for these products was generally related to income and population, and that total retail sales was a good measure of these two factors. It was recognized that retail sales was not a good measure of market potential on a national basis because of regional variations in consumption, but the firm believed that this factor could be used legitimately to allocate state figures to county units because regional consumption patterns were usually similar within a single state. Retail sales statistics were secured from Sales Management and the known potential for each state was distributed to county units in proportion to each county's retail sales. The data computed by this method were checked against information published by various organizations. The firm concluded that this approach was reliable in most instances.

Customer Census Method

A manufacturer selling raw materials. This firm used the customer census to compute territorial market potentials for a line of raw materials sold widely to various types of industrial plants. The company determined that accurate figures were necessary for marketing planning and control purposes and that the best method of securing these data was through a complete census of customers.
The customer list was prepared by supplementing the available customer and prospect list with names obtained from trade directories. Companies were selected for survey only if they met a prescribed size standard, since the firm did not wish to contact small purchasers directly. The final customer list contained the names and locations of some 8,000 plants throughout the United States, which probably represented over 95 percent of the total market.

Each of the 8,000 plants was contacted personally once each year by the firm's salesmen to determine the amounts of the products purchased during the previous year. The data were collected in units and these were converted to dollars through the use of standard price multipliers. Several other items of information were collected including the amounts of business secured by each of the major competitors.

The individual customer questionnaires were checked by the regional sales managers before they were forwarded to the central office. In some cases, the sales manager asked the salesmen to verify particular items of information. Some customers were uncooperative and in these instances the salesmen were required to estimate the data based on their knowledge of the situation. The firm admitted that in some cases opinions of the salesmen were not accurate; however, they believed that this problem was overcome by having the regional sales managers audit the questionnaires.
When the questionnaires were received in the central office, they were edited for clerical errors and then examined for accuracy by the various product sales managers who, individually, were specialists in one type of product and were intimately acquainted with the principal customers for that type of product. The basic information was then transferred to punched cards and tabulated by geographic area to compute the desired territorial market potentials. Several other market analyses were also prepared from the cards at that time.

The tabulated data were checked once again before they were released. The computed market potentials for each type of product were checked against total production figures for that product published by a governmental agency. For most products the tabulated figures accounted for well over 90 percent of actual production. A second check was made to compare the tabulated sales for each competitor with competitive sales information secured from another source, and these figures also checked out quite closely. It was recognized that these tests were no assurance that the individual potentials were accurate, but they were an indication of the reliability of the general method.

When the customer census method was adopted by this firm it was expected that at least five years would be required for the system to reach its maximum effectiveness. After three years, the firm believed that it was obtaining a reasonable degree of accuracy which
will be improved further as the sales personnel become more accustomed to collecting and reporting this type of information.

A building products manufacturer. The method used by this manufacturer is an interesting variation of the basic customer census approach. This firm markets a line of building products through a national network of building products dealers to builders throughout the United States. Approximately 600 salesmen sell to dealers and perform a promotional service in the market. The products are sold almost exclusively through the dealer channel so that total dealer sales of these products in any area is equal to the market potential of that area.

The company instructed its salesmen to contact each dealer in their territories to determine the amounts of these products sold in a prescribed twelve-month period. The chief problem was that dealers representing other manufacturers were reluctant to disclose their sales data to a competitor. In these cases, the salesmen were asked to estimate the dealer's sales based on their knowledge of the local situation. The firm recognized that the salesmen's estimates were sometimes inaccurate, but they believed that this was still the best method of securing this type of information.

Sales statistics were secured from around 40,000 dealers in the United States. The questionnaires were forwarded to the central office where the data were transferred to punched cards and tabulated. Two verification tests were made. First, the total tabulated market potential was compared with the known total figure
available in a published report. The first year that the customer census method was applied, the tabulated estimate was somewhat less than 85 percent of the known total market potential. The firm attributed this deviation to a tendency on the part of the company salesmen to underestimate their competition. In recent years, the tabulated figure has averaged around 95 percent of the known total potential, so that progress is being made. The second method of checking was to compare the market potentials for selected areas determined by surveys of contractors with the tabulated data. These surveys sometimes revealed significant discrepancies, but in most cases the tabulated estimates were found to be reasonably accurate. Over-all, the firm believes that the results obtained with the customer census can be used with confidence for planning and control purposes.

An industrial equipment manufacturer. This company used the customer census to determine market potentials by territory for its line of industrial equipment. The customers and prospects for this equipment are readily identified from trade directories. The firm instructed its salesmen to contact each customer to determine the types and amount of equipment now in place, the approximate age of each piece of equipment, and the types and amount of equipment purchased within the last year. There was little difficulty in securing this type of data because the salesmen have access to the customers' facilities and most of the information can be secured by a visual inspection of the equipment now in use. Once the original
census was taken, it was also relatively simple to determine the types and amount of equipment purchased within the past year by comparing the current equipment inventory with the one taken in the previous year. Because of these factors, the firm believed that the market potential estimates secured from these individual customer reports were highly accurate.

Individual customer data collected from approximately 7,000 plants were forwarded to the central office where they were tabulated by geographic area to compute territorial potentials. The individual customer questionnaires were reproduced and copies were returned to the regional sales managers for use in planning and control. The regional sales managers were able to use these questionnaires not only to measure past performance, but also to determine what customers were likely prospects for new equipment in the coming year. The tabulated figures and the individual reports were also utilized in the central office for company-wide planning and control purposes.

An electrical equipment manufacturer. This company applied the customer census method to compute territorial market potentials for its line of electrical equipment sold to original equipment manufacturers. The customer list was prepared by reviewing the products section of Thomas Register of American Manufacturers and selecting those firms which were manufacturing items of equipment which would probably require the use of these electrical products. Smaller manufacturers were excluded because the firm did
not wish to sell them on a direct basis. The final list contained the names of roughly 1,000 companies, their locations, and the types of products manufactured. A comparison of this tabulation with the company's customer list revealed that the company's list was fairly complete, but that it contained a great deal of dead wood.

Each of the 1,000 plants was contacted once each year to determine the amount of the product purchased in the past year. The customers were contacted by telephone, personally, and by mail by the firm's research personnel. The company believed that a more objective and a more accurate final report was obtained by using research personnel rather than salesmen for this survey work. Over half of the plants were located in and around a relatively small number of large cities. The firm's research personnel visited these cities and interviewed the companies located there either personally or by telephone. The customers not located in large cities were sent a mail questionnaire. The initial return on this questionnaire was around 30 percent, and several follow-up mailings increased the over-all return to about 75 percent. The more important of the remaining customers were contacted by long distance telephone. Estimates were made for the others based on what similar types of companies purchased.

The questionnaires were audited and then tabulated by geographic area to compute market potentials for approximately 100
trading areas. The tabulated data were checked in two ways. First, they were checked against industry-reported figures available for several areas. Second, comparisons of purchases by similar types of plants were made, and if significant deviations were found, the customers were contacted again and asked to verify the previously reported information. Based on the results of these tests, the firm concluded that this method provided reasonably accurate territorial market potentials.

A drug products manufacturer. This manufacturer used the customer census to compute potentials by territory for its line of prescription drug products dispensed by retail drug stores, physicians, and hospitals. Suitable published regional statistics for these products were not available. The firm believed that its salesmen were the individuals best qualified to estimate regional market data. The salesmen were instructed to contact each drug store in their territories and secure an estimate of total sales and prescription sales. The salesmen were also asked to contact each physician in their territories and secure an estimate of the volume of prescriptions written and the amount of drugs consumed. These data were then forwarded to the firm's marketing research department where they were tabulated by trading area.

The company estimated the amount of drugs used by hospitals in each trading area by applying an average consumption rate per hospital bed, determined by a previous market study, to published regional statistics on the number of hospital beds. Territorial
estimates were now available for each of the firm's three market segments; however, since there was a certain amount of overlapping in these data, the firm used business judgment and certain known past relationships to obtain estimates of market potential for each of the company's trading areas. The firm checked the figures computed by this method with Census statistics and with information secured from other sources. In most cases, the computed market potentials were judged to be reliable enough to be used for operating decisions.

Conclusions

The presentation of these case histories should enable the researcher wishing to compute territorial market potentials to obtain a better understanding of the methods available, appreciate some of the problems connected with the application, and see how given approaches were applied in actual marketing situations.

Several observations can be made from the case studies. It can be seen that all of the techniques discussed previously are being used in practice. Many of the approaches illustrated have been used by various companies for several years and have generally withstood the test of time. In most cases, extensive verification tests were employed to validate the procedure used. It is interesting that in several instances the basic methods could not be applied in practice without modifying them to fit individual conditions existing
in the market being studied. Thus, one should examine the market situation carefully to determine if minor modifications in procedures may provide better results.

It should also be noted that in several instances the principles outlined in this study were not followed. For example, it appears that the apparel products manufacturer which used the judgment approach should have applied correlation, and that the Bryant Chucking Grinder Company which used judgment should have used the customer census. Individual practice is, of course, difficult to evaluate because it falls within the realm of judgment. The results obtained by these firms were satisfactory from their standpoint; however, it is suspected that more accurate potentials could probably have been secured with the other approaches. This experience serves to illustrate once again the importance of examining objectively all of the methods available before making a selection for a particular application.
CHAPTER VIII
SUMMARY AND CONCLUSIONS

The plan of this chapter is to summarize the various parts of this study and to present several conclusions and recommendations. It is hoped that this procedure enables the reader to obtain a more complete understanding of the findings of this investigation.

Definition of Market Potential

Two basic definitions of market potential are found in the literature of marketing. The first considers it to be the total sales of a product made by an industry in a given time period. The second considers it to be the total sales of a product made by the industry plus those theoretical sales which would have been made if the industry had developed the market fully. Each of these definitions is appropriate for the solution of specific marketing problems. However, neither of them offers a satisfactory explanation of the over-all concept. Many of the literature definitions also overlook certain questions that must be answered if one is to undertake the computation of market potential. For instance, many of them do not indicate what time period is used, what customers are included or what territories are covered. These factors must be known if the derived data are to be meaningful.

A definition is offered in this study which brings the above elements into clear focus. Market potential is defined as the total
amount of a product which would be sold to customers who are defined as to type and geographic location, in a definite time period, under a given set of market conditions assumed or actual. The market conditions normally relate to such factors as price, advertising, customer knowledge, sales promotion, distribution and product features. Researchers studying a product often compute several market potentials using different sets of assumed market conditions. With this procedure, one can observe how changes in certain market conditions affect the potential. Thus, one should not view market potential as a single figure, but rather as a schedule of the amounts which would be purchased under various market conditions.

Market potential is divided into two categories, developed and undeveloped, for analytical purposes. Developed market potential is the total industry sales of the product in the time period being considered. Undeveloped market potential is the difference, if any, between market potential and developed market potential. These categories can be used individually or in combination, depending upon the problem being considered.

The study definition is a composite of the ideas expressed in the two definitions found in the marketing literature. However, it provides a more complete explanation of the various factors which must be considered in determining market potential. It is also believed that the use of the two categories, developed and undeveloped, within the framework of a single definition, contributes to a better understanding of these concepts.
As has been mentioned previously, several different definitions of market potential can be appropriate for the solution of specific marketing problems. The important thing is that the researcher adopt a definition and then use it consistently in the study being undertaken. Based on discussions held with the individuals surveyed, it is believed that marketing research practitioners do not always define market potential before undertaking its computation. Also in reviewing management reports prepared by various researchers, it is noted that potential information is often shown without indicating what is meant by the term "market potential." This practice can cause misunderstandings about the data being presented. The belief of researchers contacted in this study seems to be that the method of determination is the important consideration. The definition is relegated to second place or often ignored completely. It is recognized that company researchers operate under commercial pressures which often force them to make studies in a short space of time. However, it is better to take time at the beginning of the investigation to define terms than to have misunderstandings occur at a later date. It is hoped that this study will result in an increased awareness by researchers of the importance of defining in precise terms the market potential to be computed before any actual computations are made.

Variations in Terminology

Authors, in discussing market potential, often use different terms to refer to substantially the same concept. One author may
speak of "market potential," another may use the term "sales potential," while still others may refer to "sales expectancy." These variations in terminology are a constant problem and source of confusion to researchers.

The two terms confused most frequently with market potential are sales potential and sales quota. Sales potential applies to the individual firm. A firm's sales potential is that portion of the market potential for the type of products sold by the firm which the firm believes that it can obtain. A sales quota is a sales goal assigned to a marketing unit for use in the management of sales effort. It is a management device used by the firm and its relationship, if any, to market potential or sales potential depends upon individual practice.

It is recognized that researchers have the right to use whatever terms they desire provided they define them. However, it is believed that a great deal of confusion could be avoided if the term market potential is used to refer to the potential of the market as a whole and the term sales potential is used to refer to the potential of the individual firm.

Uses of Territorial Market Potentials

The most accurate and up-to-date potentials by territory are of little value unless they are used efficiently for management planning and control purposes. They can be used to measure territorial market position, determine sales potentials by territory, determine sales quotas, analyze territorial customer coverage, allocate sales
manpower, realign sales territories and allocate regional advertising appropriations. This study shows that their most important use is the measurement of territorial market position.

Several of the companies studied used these data in all of the above ways; however, in many cases no evaluation of possible uses was made. It is recognized that the practices of the individual firm depend upon the problems encountered. However, business firms wishing to obtain maximum benefits from market potential information should examine their operations periodically to determine how these data can be used more effectively in solving their business problems.

The emphasis should be on creativity rather than adaptability. In other words, the researcher should determine how this information can be used by his firm, rather than waiting for a problem to arise which requires its use. It is hoped that the material presented in this study will prompt researchers to establish a continuous and creative program for the effective utilization of territorial market potentials.

Methods of Determination

Two basic methods are used to determine potentials by territory, namely economic factor and customer census. The economic factor method requires estimation of the relationship between market potential and an economic factor or factors either by statistical correlation or judgment. This relationship is then used with regional economic factor data to compute territorial market potentials.
The judgment and correlation approaches are similar in theory. The primary difference between them is that with correlation a mathematical process is used to estimate the relationships between the market potential and the economic factors, while with judgment they are arrived at by deductive or inductive analysis of the market situation. Judgment does not possess the mathematical exactitude or the theoretical accuracy of correlation, but it is much more flexible because the analyst can allow for various individual market characteristics which are difficult if not impossible to handle with correlation.

The customer census method requires that each customer for the product being studied be identified by geographic location and contacted to determine his purchases of the product. Market potentials by territory are then computed by tabulating the individual purchases by geographic territory.

Relative Use of Methods

A review of the use of these methods by the firms studied provides an indication of their relative popularity. Of the forty firms surveyed, twenty-four employed the economic factor method, five used the customer census and eleven employed both methods. Thus, the economic factor method appears to be significantly more popular than the customer census.

An indication was obtained that the method utilized varies by type of product. Of the twenty-eight firms computing territorial potentials for industrial goods, ten used the customer census,
thirteen employed the economic factor method, and five used both methods. Twenty-four of the twenty-five firms computing potentials for consumer goods utilized the economic factor method because various conditions would not permit the application of the customer census. Thus, for consumer products the economic factor method is used almost exclusively, while for industrial products both methods are used about equally.

An analysis of the specific approaches utilized by the thirty-five companies employing the economic factor method reveals that the judgment approach was used in thirty-one of forty-six applications. A breakdown of the approaches used by type of product shows that judgment was employed in sixteen of twenty-two industrial goods cases and fifteen of twenty-four consumer goods cases. It appears, therefore, that judgment is utilized more frequently than correlation for both consumer and industrial products. This finding is in agreement with the experiences of several other researchers.

A tendency on the part of researchers to use simple rather than multiple correlation was also discovered. The number of companies involved is too small to provide conclusive results; however, simple correlation was employed in ten of the fifteen correlation applications. An indication was also obtained that in using judgment deduction is more popular than induction. It was employed in twenty-one of the thirty-one judgment applications.

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1. Several firms had more than one application.
A review of the data-collection procedures utilized by the sixteen firms employing the customer census provides an indication of industry practice. Twelve of these firms utilized their salesmen to collect purchase information from customers, two of the companies used their research departments, two firms used their salesmen and their research departments, and one company employed an outside research agency. The personal interview technique was used by fourteen of the sixteen companies. Telephone interviews and mail questionnaires were normally utilized only to supplement the data obtained from personal interviews. Thus, the majority of the firms employing the customer census used their salesmen to personally contact the customers for purchase information.

Factors Limiting the Use of Correlation

Several factors which limit the successful application of the correlation approach-economic factor method help to explain why it is not widely used by industry. One of the most significant factors is the lack of suitable sales and market potential data for use as the dependent variable in the correlation equation. A second factor limiting its use, especially for industrial applications, is the basic characteristics of certain markets. Companies which sell raw materials or components to original equipment manufacturers usually cannot apply this technique. Firms selling products which are purchased infrequently or which are purchased in one territory and used in other territories also have problems in applying correlation. Firms selling in markets where a relatively small number of large purchasers account
for a large proportion of the total market potential also experience difficulty with this approach. Time and cost requirements are a third limitation to its use. The complexity of statistical correlation, a fourth limiting factor, may restrict certain smaller firms from applying this technique, but it is not a serious limitation for larger firms.

Factors Limiting the Use of the Customer Census

Several factors limit the successful application of this method for most types of consumer goods and for some types of industrial goods. Companies selling in markets with a large number of customers who are not contacted directly by the firm's salesman have difficulty in using this method. The customer census is also limited in application where the desired purchase data reveal confidential operating details of the customer's business. Firms which sell in markets where customers do not maintain accurate records of purchases and cannot recall accurately from memory the amounts purchased also have difficulty in using this approach.

Selection of a Method

It is appropriate to consider whether the customer census or the economic factor method provides the best territorial market potentials. This question is difficult to answer because individual conditions dictate which approach is best in a given situation. Several general rules are provided in this study to guide the researcher in the selection of a method. The basic factors to be considered are the type and nature of the goods, the market
conditions and the data available. In all probability, one will not be able to use the customer census to compute territorial potentials for consumer goods. The researcher is then left with a choice between the correlation and judgment approaches to the economic factor method. If conditions are favorable for correlation, this approach should be used in preference to judgment since it possesses a greater theoretical accuracy and also has provided more accurate data in practice in the few cases where it has been tested. It also appears that from a theoretical standpoint multiple correlation provides more accurate results than simple correlation because in most cases more than one economic factor affects the market potential. If conditions are unfavorable for correlation the researcher is left with no choice but to apply the judgment approach.

It is probable that conditions will be favorable for the customer census and unfavorable for the correlation approach-economic factor method in computing potentials for raw materials, heavy industrial equipment and components for original equipment markets. The researcher should consider carefully the customer census and correlation for lighter industrial goods. Both of these approaches have been used successfully for this type of product. It should be emphasized that these are only general guides which must be applied with judgment in making a particular selection.

A large number of firms will have to use the judgment approach-economic factor method because various conditions will not allow them to use other methods. Usable market potentials can be secured
from the application of this approach provided a scientific procedure is adopted.

Based on observations made while collecting data for this study, it also appears that firms sometimes adopt a given technique without examining carefully the alternates available. In some cases, more accurate market potentials could probably be obtained with one of the alternates. It is important for researchers to examine all of the methods available before making a selection for a particular application.

The general impression was also gained that researchers are often too quick to reject correlation in favor of the less scientific judgment approach. It is interesting that over half of the firms studied used the judgment approach. The percentage of firms in industry as a whole using it is probably much higher since efforts were made in this study to locate companies using correlation and the customer census. While many of the firms using judgment have undoubtedly studied the situation carefully before adopting this approach, it is believed that a significant percentage of these companies should be using correlation to compute territorial market potentials.

The reluctance to use correlation may be due in part to researchers' lack of knowledge of this technique. In several cases, former sales managers who are not trained in market analysis were assigned the marketing research duties. This practice is not uncommon in industry. It is believed that the education of these
individuals in marketing research methods or their replacement with trained researchers would result in the increased use of the more scientific techniques for determining market potentials.

Educational seminars are one means of improving industry practice. For example, the American Management Association conducts several three-day courses each year on market potential determination. The author has participated in two of these seminars as a course leader. Approximately twenty researchers representing mostly smaller firms attended each meeting. It was found that the majority of the individuals present had little knowledge of the basic methods of determining territorial market potentials. In cases where potentials were being computed, the judgment approach was used almost exclusively. Correlation was not generally understood, and most of the participants were apprehensive about using this technique.

It is believed that these seminars helped the participants to become better acquainted with the basic techniques available and the possible uses of the derived data. It is hoped that the American Management Association expands its activities in this area and that other organizations recognize the need and develop similar programs.

It is also observed that relatively few firms utilized automatic computing equipment for determining territorial market potentials. It appears that this type of equipment holds the key to obtaining more accurate and timely data. For example, with these
machines involved correlation analyses which are practically impossible to make with hand calculators can be made quite easily. Thus, researchers charged with computing potentials should make efforts to obtain the use of this equipment, whenever possible.

The case histories presented illustrate that all of the methods discussed in this study are being used in practice. Many of the approaches have been employed by various firms for several years and have withstood the test of time. It should also be noted that in many instances the basic procedures could not be applied without modifying them to fit individual market situations. Thus, one should examine the market situation carefully to determine if minor modifications in procedures may provide better results. It is believed that the case studies will enable the researcher wishing to compute potentials by territory to better understand the basic methods, appreciate some of the problems connected with their application and see how given techniques were applied in practice.

Verification Procedure

Any method of determining territorial market potentials must be verified for accuracy before its application can be justified. This is done by determining the accuracy of the figures computed with it. Five basic verification tests are available:

1. Comparisons with published total market potentials
2. Cross checks of individual customer data
3. Comparisons with published territorial market potentials
4. Comparisons with area potentials obtained by market surveys

5. Sales managers' opinions of the computed market potentials

These tests are unlike measures of statistical accuracy in that a percentage of expected error cannot be determined. They can only indicate the degree to which a given method is in agreement with other methods and other sources of data.

The firms studied verified their methods by using one or more of these tests. In most cases, adequate published information was not available and area market surveys were required. For financial reasons, these were usually conducted one or two at a time over a period of years, while the market potentials were used. This practice is not desirable because unverified data are being used as the basis for management decisions. Researchers should validate a given method before the potentials computed with it are utilized in practice. In cases where the figures have not been fully verified due to limited financial resources, management should be made aware of the true facts. In this way the responsibility for using unverified data is placed with management rather than with the marketing researcher.

Industry Reporting

Published developed market potentials by geographic area are not available for most products. Satisfactory published figures
were available for less than 10 percent of the 53 products examined in this investigation. The majority of the firms studied are in favor of increased industry reporting of this type of information. Two factors restrict its widespread use. The most important one is that certain firms do not wish to report and they block any action by the other companies. The second reason is the lack of trade groups to collect and process the statistics.

It appears that the above factors will continue to restrict industry reporting. However, it is important for researchers to continually seek ways and means of securing industry-reported market potentials since they are normally more accurate than those computed with the methods presented in this study. The suggestion is made that researchers band together to form trade groups or to work with existing trade groups to collect and publish these statistics. The Federal Government and the various state governments should also be encouraged to collect and publish this type of information. In many cases, the desired figures can be obtained by merely making tabulations from existing government records. It is hoped that this study will prompt researchers to recognize the need for these data and to take the necessary action to secure them.

The Outlook

This study has demonstrated that knowledge of market potential is important to management in planning, organizing and controlling the firm's marketing activities. It is believed that it will be even more important in the period which lies ahead. The next decade
will be characterized by intensive competition in the market place and a drive for even greater marketing efficiency. Management will not be satisfied with answers obtained by guesswork, but will demand that proven scientific approaches be used in solving marketing problems. This will mean an increased emphasis on market analysis and measurement. Accurate market potential information is a vital factor in both of these activities.

The period ahead will also be characterized by the more widespread use of these data. The situation today is that the computation and effective use of potentials is confined to the larger business firms. It is believed that in the next decade even the smallest firm will require an intimate knowledge of its market for survival. This development will create a greater demand for practical knowledge of methods of determination and utilization of market potential.

It is hoped that this investigation will contribute to meeting these future marketing challenges, and that through this study researchers will be able to provide better market potential information from which management can make more effective decisions and thus benefit society by increasing the efficiency of the marketing system.
APPENDIXES

A. Firms and Individuals Contacted

B. Research Organizations and Independent Researchers Contacted
### APPENDIX A

#### Firms and Individuals Contacted

<table>
<thead>
<tr>
<th>Firm/Individual</th>
<th>Position/Role</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. B. Dick Company</td>
<td>Manager, Marketing Research</td>
</tr>
<tr>
<td>Mr. Merlin Schulze</td>
<td></td>
</tr>
<tr>
<td>American Brake Shoe Company</td>
<td>Director of Advertising</td>
</tr>
<tr>
<td>Mr. Paul Carroll</td>
<td></td>
</tr>
<tr>
<td>American Greetings Corporation</td>
<td>Manager, Operations and Marketing Research</td>
</tr>
<tr>
<td>Mr. Charles Joseph</td>
<td></td>
</tr>
<tr>
<td>Anheuser-Busch, Inc.</td>
<td>Director of Marketing</td>
</tr>
<tr>
<td>Mr. William Shine</td>
<td>Sales Analyst</td>
</tr>
<tr>
<td>Mr. Robert Sanguinette</td>
<td></td>
</tr>
<tr>
<td>Bryant Chucking Grinder Company</td>
<td>Assistant to the Vice-President</td>
</tr>
<tr>
<td>Mr. Francis Hummel</td>
<td>Mr. Hummel supplied information for two firms. When first contacted he was employed by the Bryant Chucking Grinder Company. He is presently employed by Stewart-Warner Corporation.</td>
</tr>
<tr>
<td>Carling Brewing Co., Inc.</td>
<td>Assistant to the President</td>
</tr>
<tr>
<td>Mr. George Leibacher</td>
<td></td>
</tr>
<tr>
<td>Cherry-Burrell Corporation</td>
<td>Manager, Commercial Research</td>
</tr>
<tr>
<td>Mr. Francis Lachner</td>
<td></td>
</tr>
<tr>
<td>Crane Company</td>
<td>Manager of Marketing Research</td>
</tr>
<tr>
<td>Mr. Fred Akers</td>
<td></td>
</tr>
<tr>
<td>Dobeckman Company (now merged with Dow Chemical Company)</td>
<td>Manager, Marketing Research</td>
</tr>
<tr>
<td>Mr. Marion Shanks</td>
<td></td>
</tr>
<tr>
<td>Eli Lilly &amp; Company</td>
<td>Manager, Marketing Research</td>
</tr>
<tr>
<td>Mr. K. W. Griffith</td>
<td>Industry Studies Department</td>
</tr>
<tr>
<td>Mr. O. W. Gable</td>
<td></td>
</tr>
<tr>
<td>Firestone Tire and Rubber Company</td>
<td>Manager, Marketing Research</td>
</tr>
<tr>
<td>Mr. J. T. Cahoon</td>
<td></td>
</tr>
</tbody>
</table>
General Electric Company
  Mr. Bruce Kinsey  Marketing Research Analyst
  Mr. John Lewis  Manager, Product Planning and
                  Marketing Research
  Mr. Francis Myers  Marketing Research Specialist
  Mr. Harlan Pickering  Distribution Research Specialist
  Mr. Clark Waid  Sales Analyst
  Mr. Robert Weber  Marketing Research Analyst

General Foods Corporation
  Mr. G. Sterling Brady  Manager, Marketing Research

Graybar Electric Company, Inc.
  Mr. S. V. Reiss  Manager, Commercial Research

Harris Seybold Ltd. (Now Harris-Intertype Corp.)
  Mr. Edward Paran  Manager, Marketing Research

Hotpoint Inc. (A Division of General Electric Company)
  Mr. J. Peterson  Marketing Research Analyst
  Mr. William Sanford  Manager, Marketing Research

International Business Machines Corp.
  Mr. John Hawk  Director, Applied Science

International Shoe Company
  Mr. B. E. Edscorn  Manager, Commercial Research
  Mr. Andrew Pierce  Sales Analyst

Iron Fireman Manufacturing Company
  Mr. D. Paul Bailey  Manager, Marketing

Magnus Chemical Company
  Mr. Edward Peterson  Sales Manager

Mead Johnson & Company
  Mr. C. Merle Crawford  Manager, Marketing Research

Mettler Instrument Corporation
  Mr. Neal Cooper  Sales Supervisor

Miller Company
  Mr. Robert Edgar  Manager, Marketing Research
Monsanto Chemical Company
Mr. William Clark  
Mr. Edmund Greene  
Mr. J. Pawley  
Mr. Tulius Tupper

Business Analyst  
Director, Marketing Research  
Manager, Marketing Administration  
Manager, Sales

Nationwide Insurance Company
Mr. Ron Mac Donald

Marketing Research Analyst

Norton Company
Mr. Thomas Higgins

Market Analyst

Proctor & Gamble Company
Mr. Alan Entine  
Mr. Lee Welsh

Economic Research Department  
Economic Research Department

Ralston Purina Company
Mr. A. P. Truex

Manager, Sales Research

Reliance Electric and Engineering Company
Mr. William Hartman

Manager, Commercial Research

Republic Steel Corporation
Mr. Edward Carlin  
Mr. Philip Sandmaier

Economist  
Manager, Commercial Research

Sears Roebuck and Company
Mr. Arthur Rosenbaum

Manager, Economic Research

Sperry Rand Corporation
Mr. A. N. Seares

Vice-President when surveyed. He is now retired.

The Standard Oil Company of Ohio
Mr. Henry George

Manager, Marketing Research

Stanley Works
Mr. George Breen  
Mr. John Maras

Director, Commercial Research  
Assistant Director, Commercial Research

Stewart-Warner Corporation
Mr. Francis Hummel

Manager, Marketing

Swift and Company
Mr. R. Wray Coffman

Manager, Marketing and Sales Research
United States Gypsum Company
Mr. C. O. Futterer
Manager, Marketing Research

United States Steel Corporation
Mr. Philip Lopatnikov
Manager, Commercial Research

Westinghouse Electric Corporation
Mr. Paul Stewart
Marketing Planning Department

York Corporation
Mr. V. T. Kartorie
Manager, Market Research
APPENDIX B

Research Organizations and Independent Researchers Contacted

American Management Association
Mr. Coleman L. Finkel  
Manager, Marketing Division when surveyed. He has since left this position.

American Supply and Machinery Manufacturers Association
Mr. F. A. Peterson  
Executive-Secretary

Richard D. Crisp and Associates
Mr. Richard D. Crisp  
President

Fuller and Smith and Ross Inc.
Mr. Robert Ryder  
Director of Research

McCann-Erickson Inc.
Mr. Clark Zimmerman  
Director of Research

University of Michigan
Mr. Donald R. G. Cowan  
Professor of Marketing

National Industrial Conference Board
Mr. George Umemura  
Division of Business Practices when surveyed. He has since left this position.

Penton Publishing Company
Mr. N. R. Ladabouche  
Manager, Market Research

Service Bureau Corporation
Mr. Z. Szaterowski  
New York Processing Center

Statistical Tabulating Service
Mr. Dean Gardner  
Manager, Cleveland Office

Tradeways Inc.
Mr. Willard Fox  
Vice-President

Univac Computing Center
Mr. Robert Daskem  
Analyst
U. S. Department of Commerce
Mr. Nelson A. Miller

E. H. Weiss & Company
Mr. Samuel Silberman

Director, Office of Distribution

Director, Research
Selected Bibliography

Books


Articles in Periodicals

1. Aries, Robert S. and William Copulsky, "Determination of
   Area Market Potentials for Chemical Process Raw
   Materials," *Journal of Marketing*, 14 (April 1950),
   pp. 730-32.

2. Beder, H. W. Jr., "Harris Seybold Grades Prospects, Matches
   Sales Punch to Potential," *Sales Management*, 83
   (September 18, 1959), pp. 40-42.


5. D'Alemaine, H., "Steps in Determining Industrial Market
   Potentials Defined," *Printers Ink*, 213 (October 19,

6. Davis, W. E., "Formula for Setting Fair Sales Quotas; Past
   Performance and Latent Opportunity," *Printers Ink*,


8. Estes, Bay E., "How U.S.S. and Subsidiaries Measure the
   Steel Market," *Industrial Marketing*, 34 (April 1949),
   p. 62.

9. Evans, D. C., "What You Should Know About Industrial
   Sales Analysis," *Industrial Marketing*, 44 (May
   1959), pp. 43-45.


11. Gallagher, Stanley T., "If You Want Lower Sales Costs, Pin
    Down the Facts on Potential," *Sales Management*, 73
    (July 15, 1954), p. 78.


Research Reports, Government and Other Publications


I, Robert Walter Baeder, was born in Cleveland, Ohio, February 13, 1929. I received my secondary-school education in the public schools of Parma, Ohio, and my undergraduate training at Western Reserve University, which granted me a Bachelor of Business Administration degree in 1949. I was a graduate student at the Ohio State University from 1949 to 1951, and was awarded the Master of Business Administration degree in 1950. While in residence there, I served as a Graduate Assistant in the Department of Business Organization. From 1951 to 1953, I served in the United States Air Force, and from 1953 to 1956, I held several economic and marketing research positions with the General Electric Company. I also served as a lecturer in Business and Economics in the Evening School of McKendree College from 1951 to 1953. In October 1956, I was awarded a Ford Foundation Fellowship, which I held for nine months. In July 1957, I returned to the General Electric Company as a member of an Operations Research team. I left that position in May 1958 to head the Marketing Research unit of the General Electric Supply Company, the position which I currently hold.