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SERVED MARKETS: PRACTICAL BUSINESS DEFINITIONS

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I. INTRODUCTION

THE BASIS FOR SERVED MARKETS

A primary reason that business exists in our society is to provide a return to the shareholders. In addition to the return, shareholders also expect the business to perform a useful function by providing products and services that meet various customer needs. The idea of providing useful products and services has been taken further in recent decades to include a social responsibility role of the business. This means that a business needs to consider the social and environmental consequences of their decisions and modify those decisions to conform with the environmental and social norms of the era while still providing a return to the owners. A business provides a return to its shareholders by taking a raw material and adding value to it by some method to provide a product which fulfills some need of society. The input materials require a cost as does the adding of value. The product is sold for a price that will try to recover all the associated costs in making the product plus an increment called profit. Profit can have varying meanings depending upon the aims of the business, and it does not always have to refer to some monetary figure. For example, a business could take a position that no profit is necessary beyond that used for selling, administration, and other business-perpetuating expenses. Therefore,

total net income would be close to zero, the ideal for government and charities. Profit margin goals are often different depending upon what other expenses have to be paid before the net income line. For a new business which has no definite market identified in the formative years of its life, a profit goal is not meaningful. Only after a potential future for the product is found should a profit margin goal be set. Even then, the net income of a business may be negative through the early growth section of the life cycle and "profit" as measured by cash flow could continue to be negative until the middle growth life cycle stage. Nearer the end of the product life cycle, profit margins may shrink, but profit as measured by net income and cash flow will continue to grow due to less expenses and process streamlining. For the purposes of this paper, profit will mean gross profit margin except where otherwise stated.

The gross profit margin provides the basis for business expenses, net income, cash flow, and the money to return to the shareholders a part of their initial investment through the dividend mechanism. To maximize the return to the company over time is of benefit to the company and the shareholders and is an object of any business. To effectively perform this task called business, some sort of planning is necessary. This may vary from the vague idea in the head of the company president that never gets written to the most detailed written plan. Regardless of whether or not the plan is done consciously, to produce a plan requires a knowledge of what the business

has done, does today, and what it wants to do in the future relative to the outside environment. The process of finding and conceptualizing the present relationship between a business and its environment over the plan time frame is called strategy formulation. The method by which the necessary actions are taken to achieve the desired relationship with the environment is called strategy implementation. The intermediate stop which translates the present strategy into a set of necessary actions is called strategic planning.(1) The process of administering all three tasks over time to satisfy the goals of the organization is called strategic management.

During the past 20 years, the strategic formulation-planning-implementation process for multi-product companies has evolved from a basically financial art to a state today where rigorous procedures are used to define a business, its strategy, and provide input into the development of action decisions. The strategic management process function is found usually in a staff position with much coordination responsibility, but little authority so that the resulting plans and ideas are representative of the operating units, for whom the planning is done. The process of arriving at a plan, updating the plan, and maintaining it over time to compare to and measure with actual performance has become the product of such staffs continuing year-round.

Until recently, many companies dealt with planning on a once a year basis with little thought during the remainder of the year

to planning and comparison of results to forecasted expectations.[47] Reasons for the behavior vary but include some of the following:

- The pressure of the current problems.
  Operating managers for whom planning acts as a guide for the future are also very concerned about the present year's results. Therefore, the long term view gets overlooked, and this is emphasized when the manager is rewarded based only on measures such as current year ROA rather than on progress towards a specific goal.
- The lack of available manpower.
  Due to the comparatively recent advent of planning as an important year-round function, the responsibility for it is often placed on the financial person or a person who is unfamiliar with planning. This leads to a lack of commitment to the process. Manpower devoted to planning at the business level of a company can be hard to justify.
- The lack of confidence that forecasted numbers on a product line basis have a good relation to the production plant.
  The lack of credibility and measurability of the success or failure of a specific plan or set of actions is a prime excuse for managers to justify not spending the proper time in going after the proper communications to develop a good plan based on sound principles such as historic trends of the business. This is especially true for multi-product factories.

In this paper, we will restrict our discussion to multi-product, multi-plant companies. This is because multi-product companies have a variety of businesses, all with different strategies so that any practical definition for a served market can be adequately tested across strategy boundaries. Additionally, the author is a strategist for a multi-product company (Phillips Chemical Company). The typical company of this type started as a single or several product producer from one plant. The products were similar and could be thought of as "one." As the company grew and expanded into other products and plants, the accounting function most likely became hardware or utility oriented as it is much easier to separate and aggregate financial information around pieces of the plant rather than the various products produced. The measure of performance probably did not change as the company grew and became based on some financial result of the year. Only recently have companies accepted that one measure of financial performance is not necessarily good for all products.[8] For example, a new product just introduced should probably not have the same financial measure of success as the product that has been around for 20 years because different strategies cannot be judged using the same financial criteria. Part of the slowness in the introduction of new measures of performance is due to the difficulty of changing accounting procedures to show in a consistent, comparable, and equitable fashion the new measures of performance. Frequently this involves changing the accounting to reflect a product line rather than a plant entity, a process resisted by the inertia inherent in the present methods.

Once a company gains the facility to allocate costs to products with a fair degree of accuracy to a product, it is only a small step to being able to use different financial criteria to measure a product's performance against various goals. For instance, a new product will likely have a strategy calling for goals of increased sales and/or margin while a product later in the life cycle will have strategies for which ROA goals are appropriate.

The strategic management process can now be introduced and applied to each product and the markets that product serves with the confidence that the strategic success of a product can be measured objectively as well as subjectively. In this manner, plans and actions are established for each of the SBU's business in the portfolio of the company. These strategies and objectives are communicated upward in the organization to the corporate level. Corporate strategy then consists of a broad collection of individual business strategies to which the senior executives attach priorities for the resources available within the company. The interaction of the business level and corporate level in strategic management leads to the creation of a formal long term plan committed to by all levels of the organization and from which each business can derive its own mission within the overall corporate goals. The corporate objective in the strategic management process is to allocate company resources to the various business segments based upon the segments' strategic needs so that the return is maximized over both the long and short term.

BUSINESS STRATEGY

Each of the company segments that make up the multi-product company is composed of various product lines, each of which has its own strategy for the product-market relationship. In order to arrive at strategies that are appropriate for the company as a whole or for the company segments, the various businesses that make up the company must be defined. A business consists of a product, a market, and the people that allow the two to interact.[2] What the planner must do to formulate strategy is navigate within the business domain to arrive at results that define the domain and give it definition over time.

It is the definition of the business and its served market that is the basis of any strategic planning process. Without a set of relationships between the business and the environment within which it functions, no strategy can be formulated for there is no base upon which to rationalize the strategy and no set of outside competitors with which to compare our success or failure. Additionally, without a knowledge of the competitive environment, tactics to implement whatever strategy there is are hard to outline and harder to gain priorities for. This realization of the need for a set of well-defined businesses before a set of relevant strategies can be developed leads to the use of planning staffs assisting in the business definition and served market description to ensure that a consistent set of base assumptions are applied objectively over all product lines and business within the multi-product company. This argument has been directed at the business level strategy but there is the interaction between this level and the corporate level strategy which must not be

forgotten. In a paper by Vancil[49], the proposition of three strategy levels is put forward. This paper considers that business level and activity level strategies are part of the same level, and this interacts with the corporate level. In general, corporate strategies concern the financial factors and the social and ethical environment within which the company will operate. The resource allocation process between businesses of the company tends to be the main interactive area in a multi-product company.

BUSINESS DEFINITION AND SERVED MARKET

The need for a consistent definition of the business and associated served markets across all business segments of a multi-product company has been shown. The problem then becomes one of deriving a set of practical rules for use in the various situations encountered in a multi-product company. To address this need is the purpose of this paper. The approach to building such a set of rules will be made using actual examples and using a postulated set of rules to derive the served market. This derived served market will be compared to the actual served market and to the rules. The PIMS program of SPI will then be used to predict product performance as influeced by the alternative served market definitions. The postulated set of rules should bring the expected ROI of the product line closer to the actual ROI than the expected ROI using the present served market definition.

However, before embarking on compiling a set of rules, let us clarify the difference between a business definition and a served market definition. Several authors[2] including Abell[1] maintain

that by defining the business, market boundaries are then determined. Others,[38,34] primarily Day and Schocher[37] say that business definitions are strongly influenced by the market boundaries of the product produced.

For this study, I will agree with Abell because when a new product is considered, although the needs of the potential served market are thought of, this is really a result of the business definition which depends on the people involved, the method of production, facilities available, etc. While the served market influences the definition of the business after the business is established, if the served market changes as it frequently will during the early stages of product life, the definition of the business will not necessarily change in terms of the needs of the users, the production technology, or the competition.

OBJECTIVES AND LIMITATIONS OF THE STUDY

In many multi-product companies, there has evolved over time a planning process that has a financial area and a planning area managed by different people.[47] The planning process is in reality several different processes that have never evolved a single structure and are still tailored to individual businesses and use whatever data the business gives. Although standardization has taken place within businesses, this has not extended to the standardization of the whole planning process and the development of strategic management as described earlier. In such situations, there may be as many ways of defining a served market as there are businesses. The individual

businesses are left to arrive at a market and a business definition because "They know the business best." A central planning staff acts as a coordinator, not able and not expected to do more than be sure the business definitions are justified according to a logical rationale. This logical rationale has developed in some companies as a set of guidelines on what not to do in the procedure, not what to do; again, agreeing with Vancil's work.[49] Producing a positive set of guidelines to be used in determining served markets will increase the comparability of businesses by putting this characteristic on a similar basis throughout the company from the beginning of business considerations. This not only helps the credibility of the businesses but reduces uncertainty of input data to strategic management tools such as the PIMS program, life cycle, Strategic Grid Charts, etc. More accurate data in turn enhances the accuracy of output of such programs by reducing scatter. If a consistent set of rules were used across companies to define variables such as served market, we would expect to see the 20% unexplained variation[8,9,10,11] present in the PIMS program drop; thereby, improving the usefulness, credibility, and accuracy of results obtained from such programs.

While this paper is intended to address the definition of a business's served market, it must be remembered that served markets are only a small part of the information that characterizes a business. For any given business, there may be a reason to modify a set of consistent rules and this will tend to introduce bias. However, introducing such a set of rules is the first step on the road to

determination of empirically derived "laws." The next steps are to gather data using the proposed set of rules, test the data for consistency, and find those relationships which best describe served markets to reinforce our rules and modify and improve them.

This study also does not address the problem of tracking accounting data to a served market. Take a case of a product used in several served markets but made in the same plant. The plant has overhead allocated to it plus fixed and variable costs to allocate to the product. The allocation of waste, leakage, and other variables must also be done on an equitable basis to fulfill the objective of representative accounting data for each served market participated in by the plant's products. As companies evolve towards strategic management, the accounting system support of strategic business segments will become even more important to ensure proper representation of the business.

II. SURVEY OF THE LITERATURE

The following paragraphs trace the development of the present ideas concerning served markets from the historical and strategic perspectives. It shows that various researchers have tackled served markets in various ways until today it has become an integral part of the strategy formulation process.

HISTORY

A market can be described as a continuum bounded by constraints within which the forces of supply and demand meet and interact with one another.[23] The first recognition that the marketplace could directly influence production came when Adam Smith observed that "The division of labor depends upon the extent of the market."[24] Smith recognized that as industry became more complex, it would depend upon an existing and extensive market mechanism for its development.

The development of the factory system following the Industrial Revolution was in turn followed by the application of advanced science and technology to the production process. This has occurred in an ever accelerating spiral over the last 100 years to produce the present scope and complexity of markets and producer-consumer interactions within the many kinds of markets that exist today.

In the late 19th century, a systematic general equilibrium of the marketplace was put together in terms of mathematical equations by the French economist, Leon Walras.[25] These equations

attempted to describe the marketplace by analogy to mechanical devices which led to the leaving out of two important factors which must be considered when analyzing a market. These factors are: (1) Time, a marketplace is a dynamic equilibrium always in a state of change anticipating or reacting to new developments; and (2) Humans, who can change present actions based upon future expectations of what is going to happen and, therefore, make present change that cannot be described by Walras' equations.

The equilibrium idea of a market was destroyed by the Keynesian Revolution[26] which led to the realization that competition is never perfect. This brings us to the present. Although there are the classical theories of market behavior which have been advanced by economists and are taught in schools,[27] there is in existence no one theory or set of theories that cover all markets and the various types of behaviors that can be expected of the participants.[28]

Given this variability in the marketplace, it makes sense for a manufacturing business to examine itself and decide which markets it wants to participate in and then to analyze the chosen market to determine if the basic goals of the business can be met by participation. It is to part of the idea that market analysis is helpful for a business that this paper is addressing itself. By determining the size of the market and an individual business's place in that market, a sound basis for the analysis of the business is created.

CONSTRAINTS

The Greek historian, Herodotus, said that the Persian Empire had no markets[22] because the governmental administration dictated

the transfer mechanism of goods and services throughout the Empire. Perhaps in the strict sense, this is not true; however, a characteristic of markets is that the transfer price of goods and/or services between seller and buyer is allowed to vary and be influenced by outside variables such as availability. When this characteristic is denied as in ancient Persia or in some modern countries such as Russia and East Germany, this constraint of the market will feedback to the human buyers and sellers to dictate what is made for sale in the market. The United States has experimented with this idea on a limited basis. It was done to stimulate and insure production in the case of uranium oxide during the 1950's and 1960's. The problem with putting constraints on the marketplace is that events change to make the constraint invalid, and this will effect the supply-demand balance and cause companies or producers to react in ways not foreseen when the constraint was made. In the case of the regulated markets, this result has shown up in the function of "black markets" which have only the supply-demand constraint to set prices. In some cases such as Cuba,[29] regulated markets have even become recognized as being harmful to the country's best interests. In the case of uranium oxide in the United States, an artificial price supported production as long as the price was high enough to justify the participation of companies who felt that production of U_3O_8 was helpful in the quest of maximizing return to the shareholders. When the price became too low to provide a return, companies looked elsewhere for investment opportunities leading to forecasts of scarcity of product. Freeing the price level caused increased production again in the 1970's as once again an attractive return could be realized.

These cases illustrate some of the problem constraints a market can cause for companies and provide another reason for the analysis of served markets in a multi-product company. Although the consumer or buyer of a product is the target of such analysis, changes may go unrecognized in the marketplace unless the organization tries to get an informed viewpoint which enables an effective response[30] based upon the goals and objectives of the company.

STRATEGY-MARKET RELATIONSHIP

In a modern multi-product company, it is becoming necessary for the reason for existence to change from providing maximum return to the shareholders to one of satisfaction of both revenue goals and socially responsible goals.[31] The range of a multi-product company's decision making involves a wide variety of businesses and business formations. For such decisions to be made correctly and satisfy the overall goals and objectives of the company, the best information is needed. To provide such information for a business, the business must be defined[1] and a strategy formulated[32] within which information can be generated. To formulate a strategy and define the business, an accurate reading of the served market of the product produced is needed.[33] This served market also has feeback to the definition of the business to keep it up to date. The served market investigation also acts as an audit over time to judge the effectiveness of the strategies pursued, as well as acting as a base for change in those strategies.[34]

It can be seen that the served market concept and its uses are not wholly independent of strategy or business definition but rather that the three interact to provide the manager better information and an improved framework within which he can run the business. This applies equally to the short term and long term. In practice, however, the applicability of served market-strategy interaction in the short term is preempted by the manager's focus on today's financial results.[35] In this case, such knowledge serves only to provide reference points to the past and future; although it does provide information on what tactics might be used to get to the long term goal. For the long term, strategy-served market information can best be used to set the business's objective and to persuade the business manager to follow the appropriate business strategy to achieve the long term goal regardless of short term financial problems. This stage is where today's multi-product company's business manager is most likely to fail as the salary compensation system is rarely in tune with the strategic goals.[36]

THE SERVED MARKET IN PLANNING

Previous paragraphs have shown how the served market and its definition can be important to the business and company strategy, given that a market exists. Before embarking on the quest to find a method of served market definition that can be used in a practical manner, consistently, in various types of markets, an examination of the current methods for finding and defining served markets is indicated along with identification of the various reasons these methods are not sufficient.

The Strategic Planning Institute of Cambridge, Massachusetts, defines a served market as:(3)

> Sales within the served market are defined as shipments of products or services made within the area boundary chosen for the served market, less the amount exported to other areas, plus the amount imported from other areas.

Theoretically, this definition may seem fine; in practice, it has several serious flaws. First, to be a useful definition for a company, a definition must fit the available numbers. This is illustrated by the case of theplant who makes products for export, the amount of which varies widely from year to year. If the above definition is adhered to in talking of markets, then the company should allocate investment to each served market, and each year the investment numbers will change. This allocation is never easy, as accounts are usually on a hardware, or total product basis. Even if it could be done, management needs to have the fewest possible number of changing variables from year to year to keep the confusion factor low. Secondly, to be a useful definition, it must be comparable from year to year so that trends can be plotted. A definition should mention the consistency of the variable. Thirdly, some protection should be made when defining the served market to ensure that the product manager has the least possible temptation to redefine the market to make the business look better when one of the "scientific planning" tools is used to analyze his business.(21) In the PIMS program for example, the market share variable has a

large proportional impact on the expected profitability of the business. By making the served market larger, the market share becomes smaller, decreasing the expected ROI and enhancing the view of the business if actual performance turns out better. Of course, the converse is also true, and this acts as an incentive to find the correct served market.

The PIMS definition of served market covers geography but does not cover swap provisions between companies or a monopoly position by a product or what boundary conditions are to be used when trying to determine what the competing products are; i.e., price properties, distribution.

The implication is that the market boundary and hence the served market is a prelude to deciding upon the business definition and the strategy.

The law has also made attempts to define what a served market consists of for a product. The consensus is(21) that a relevant market includes all products that are interchangeable from the consumer's point of view with the product in question. This is a broad definition and can only be used in law where there are enough constraints to bound the definition to apply to our individual case. Finally, Day and Shocker(37) in their report state that, "Such issues as the basic definition of the business . . . are strongly influenced by the breadth or narrowness of the definition of competitive boundaries."

Several researchers, notably Bell, Keeny, and Little[28] have tried to quantify mathematically what a market share can be. However, not only do these mathematical results depend upon questionable assumptions,[39] but no case studies are presented to support such theories and their practical application.[40,41,42,43,12] For example, two of the assumptions are that attractions between products and market are non-negative and that zero market share should have zero attraction. These ideas are plausible but do not consider the case of a person shopping for a dentist who wants the least unattractive alternative; or the case of the product just developed that is not commercial, yet does have attraction for certain customers.

Several studies using mathematical models that do have case studies included seem to be limited to the mathematics used in testing validity of results[7] rather than defining the boundaries in which a market exists.

With the passage of time, it is likely that the increased availability of detailed market data will allow the development of more detailed econometric models that will predict market share. A promising start has been made by Wittinck[22] but even he admits the lack of available data hampers the testing of the model. Wittinck arrived at the parameters of a market share response function estimated by using time series data for several sales territories. The conclusion was that for the brand studied, advertising may serve to increase the price sensitivity. Problems included the lack of

comparability of data, pooling methods, lack of precision, and large uncertainty. Further studies are recommended to consider variable interactions. Eventually, with the development of mathematical descriptor models, they will still be limited in application and the use of the model might be too costly to become widespread; thus, defeating the purpose.

A somewhat different approach to the problem of defining the served market is taken by Abell[1] and Hammond.[44] They make the claim that the individual business definition determines the market boundary definition[1] and further state that market boundaries can be defined in these terms. These three variables then replace the two conventional descriptions of a business, the product and the market by becoming more fundamental.

In this paper, I agree with Abell and will assume that the served market is a natural outgrowth and part of the business definition. There are several reasons for doing this, a principle one being it merges the business definition and the served market definition into one set of parameters and so helps to make it easier to think about the business. It is hard to think of market boundaries independently of the business definition, since businesses are normally defined using some sort of market term as a reference. There is a distinction between total market and served market. Some authors such as Thompson[50] talk of total market and served market in terms of market domain and a task environment within the domain. The served market is that portion of the total market that

the business selects to serve with its products. A total market is often miscalled an industry but really is determined by the reasonable interchangeability of the user or the cross elasticity of demand between the product itself and substitutes for it.[45] Here then, a market could describe the supply-demand between various industries that make products which service the same needs.

Within the total market, there are sub-markets or served markets that are defined by the participating supplier and the definition of the served markets within total markets will vary from business to business dependant upon diversification, distribution channels or any of a myriad of other ways.

This difficulty of not being able to compare or measure the served market leads to great confusion and various estimates of what a market share really is. It could be that a business and its competitors make similar products but sell them to various different customer groups. One cannot then add up the market shares as perceived by the individual sellers and get 100% as they are talking about different served markets. The PIMS approach[16] does rely on a 100% total for market share and so implies that the analyzing business has translated all information to be based on his served market definition. This results in allocated estimates of the served market[44] that detract from the accuracy of the figures but adds to knowledge about which markets the competition is serving.

MEASUREMENT OF SERVED MARKET

The PIMS program prints a "General Guideline for Defining a Business" within which is a section on served market. Subdivision of businesses should occur if two of the following are true:

1. Each segment or channel contains markedly different competitors.
2. The segments have markedly different growth rates.
3. There are markedly different shares in each segment.

Beyond the definition given previously and the above, it does not give explicit guidelines on how to identify the competitors in your chosen business or served market. None of the other papers referenced above purport to tell how the served market can be defined. This leads to the realization that a set of practical guidelines for use by the strategist would have very beneficial results. First, it would put the served market definition for businesses participating in different markets on a consistent basis. This will make comparison of the market share variable more meaningful as the values have been generated using the same method. Therefore, when analyzing market share data, it may be possible that trends could be seen that were impossible before when the error between measurement of different served markets was large.

III. THEORY

The planning strategy that a business decides to adopt and the subsequent strategic management practices that are used to carry it out depend upon the ability of the planner to lay out for the operational management the situation as it exists today and a range of alternatives from which the decisions are made.[46] To enable the planner to do his job effectively, he must have at hand analyses of the business characteristics such as market share, technological capacity, growth rate, and many other factors. The possibilities are almost limitless. It has been found that the served market position is one of the most important determinants of profitability;[19] therefore, any improvement in the measurement of this variable should lead to more meaningful measures of company results.

The objective for this paper is to derive a methodology for defining the served market in a practical way that is useful and realistic for potential users. The methodology will culminate in a set of rules or procedures that can be referenced when analyzing a served market for a business.

Testing of these procedures will be done by comparing the definitions for served market that are used presently for several product lines and businesses within the author's company to the definitions arrived at by using the set of procedures. The PIMS program of the Strategic Planning Institute will be used to compare the effects of the two served market definitions upon expected ROI. The comparison

of the expected ROI to the actual ROI of the business will act as an indicator of which served market definition is the more realistic in terms of explaining the business performance.

ASSUMPTIONS

Several assumptions have to be made to ensure that definitions of served markets are compatible. First, the measurement unit to be used will be current dollars. This assumption must be made to ensure comparison between markets and businesses rather than using production units which vary. The dollar or monetary unit is easily compatible with the business accounting data. Second, the served market of a business is that market as perceived by the business in question, not the consumer or the competitor. Third, the view of Abell[1] will be used where the individual business definition determines the market boundary definition. This means that the served market is considered in terms of customer groups, customer functions, and technologies.

With these assumptions, we can begin to construct a set of procedures for defining served markets via the definition of the business.

DERIVATION OF RULES

To define a market, a product must first exist and for a product to exist, a need must be fulfilled. Therefore, the technology of the product must be considered first. What does it do and more importantly what, if anything, does it do differently or better than any other product in the marketplace? Once the physical things that the product does are defined, the analyst must address himself to

what needs the product can fulfill and identify other available products that can fulfill the same needs to a greater or lesser extent. At this point, we are not concerned with comparative variables such as price, or intrinsic properties. The objective is to isolate the absolutes in terms of what our products can do and what other products exist that do all or part of what ours does. This procedure is only one small part of strategy formulation at the business level, but is critical for the whole totality of corporate and business strategy formulation.[49] To illustrate and clarify what is meant, I have generated a hypothetical example of a new type of lightbulb which will be used to clarify the process. Table 1 shows the two steps discussed so far. First, the "what it does" category and then the property and similar product list are shown. Now list the specific needs of the product as you, the producer, envision the market (see Table 2). Be careful not to exclude any needs that your product has the potential to fill. Again, follow this by listing the various products on the market that also fulfill all or part of each need. In this way, we make sure that no need that the product could fulfill is overlooked. This information is generated by market research projects and is kept up to date using strategic data bases which contain the history and projections as well as present data for the business. This includes market data, financial data, and other descriptive time dependent data such as that used for life cycle positioning, etc. This type of information is especially important when trying to decide where to launch an embryonic product to have the best chance for success, or if it does fail, what area to tackle next.

So far, the needs have all been from the point of view of the manufacturer, but if there are any known needs this product fulfills, as defined by possible consumers, they must also be added. Notice that the technology of the product has been used to arrive at the possible customer needs this product might satisfy, and this follows common sense by implying that a useless product is one that does not satisfy anyone's needs.

Next, the competitors' need to be named for each of the needs that appear above (see Table 3). If one competitor purchasing one or several products appears under several needs, that's alright. At this point, we still have a "loose" table trying not to leave out anything. Finally, consider the types of customers who buy the product because it fits a particular need and list this subdividing the customers by groups based on what the needs customers are perceived as trying to fulfill (see Table 4). For example, brokers are a customer group similar to the customers who sell furnishings and use our light in their fixtures. Brokers may not dispose of our products consistently to any customer group, and because of their nature of doing business, they are grouped together.

Notice that in Table 4 there is now the picture of our product being inputted into the marketplace with various other similar products. On the other side of the market, there are numerous groups of customers wanting our product and those similar to them to fulfill certain needs. This is the large picture and by cutting the tables along the line of needs for various customer groups which are met by sets of competitors producing the technology to meet the needs, served markets are formed.

Arriving at this point is fairly easy and straightforward. The technology used in the answering of the need now has to be applied cutting through the competitor dimension and the customer dimension. This is done to better differentiate your company's way of fulfilling a need from some competitor's way of doing it. For example, if Company M fulfilled the need for something to create fire by selling flints and strikers, this should be very different from Company N selling disposable BIC butanes. This differentiation of markets has the added advantage of being a first cut at solving the price differential problem that all analysts worry about. Table 5 shows the result of this exercise by removing the competitors who sold such things as light that sparkled, or in some other way did not answer the need in a similar manner to ourselves. Table 5 now has a list of competitors and a list of consumers under each need generalization which now becomes our served markets. For a product already established and under analysis, the markets that are not participated in can be discarded or kept for exploration into whether or not the company wants to try to sell products into any of these markets. Notice that although a served market is made of customer groups, each customer group is not always a served market.

The above exercise has differentiated the served markets in which the company participates. The next step is to define the scope of these markets by considering the parameters of the market such as price, geography, distribution, etc.

Geographic boundaries are set by consideration of transport costs when other things such as political boundaries don't interfere. The boundary dictated by transport is that line beyond which you would have to sell your product at a cost that would violate the margin objective of the business. In cases where the product is f.o.b. at your plant, the distribution cost assumed by the customer will dictate boundaries based upon the willingness or need of the customer for your product. This assumes that we are talking of customers who know your product exists which is a function of the geographic boundary to the extent of that boundary being fixed by the sales force territory.

PRICE, ETC.

The easiest way to address the problem of price in defining a served market is by example. For this purpose, let us consider the first served market given in Table 5. So far, we have found that there are two competitors and we are serving customers in the house contracting and office building areas. This customer group was derived by adding together the customer groups identified in Table 4 that had the same competitors serving them.

Price is a problem in defining served markets because although you and the competition are serving the same customer needs with your products, the products of the competition are usually priced differently than yours. Exceptions include commodity-type products and the cases of freight equalization to meet the competition. Price is a property of the product and as such can be used by the business to influence market position and other variables.

There may be many reasons for this such as (1) the competitors wants to break into the market; (2) the competitor is much farther down the experience curve and can really price cheaper; (3) you have a vastly higher quality and, therefore, charge more. Additionally, a business takes into account price elasticity, demand, life cycle stage, excess capacity, etc., when making a pricing decision although this is not the only instance to change at such a time. The problem really is one of asking at what point does the price of a competitor's product eliminate that product from consideration in the served market. The answer is the price at which the customers no longer consider that under or over priced product worth the risk of consideration. This is influenced by other factors which cannot be ignored such as quality, reliability, and other extrinsic properties.

Hence, we see that price is a property of the product, and that although it cannot be separated from other properties such as quality and service, etc., will influence the customer to make a decision whether or not to consider the products in the buy decision. Therefore, when several competing products fulfill the needs of the customer group in that served market, all of the products are to be considered regardless of price, unless and until it is known that the customer group or average does not consider product X in their buying decision at all. This may be due to price; it may be due to another extrinsic property of the product that renders it "out of line" compared to the various other product offerings. To find where this product X would fit in, it is necessary to define its served market based on what needs it fulfills versus those needs that are filled by the products

in our served market in question. Summarizing, price is a property of the product that helps in the tactical advancement or decline of the product just as other extrinsic properties of various products that compete for customers in the served market. These properties are hard to separate one from the other unless we consider the competing products from the customers' viewpoint. Analogous to this idea is the definition of relative quality which runs as follows:(19)

> "Relative quality of a product is that percent of the product that is considered superior to its competitors minus that percent of the product that is considered inferior to its competitors as <u>perceived</u> from the customers' viewpoint."

So it is for price that we could have a definition which might run as follows:(51)

> "The upper and lower bounds of price for a product in a given served market are dictated by the price, quality, reliability, etc., interaction that is <u>perceived</u> by the customer groups designed for that particular served market."

And then relative price could be:

> "Relative price of a product is the average price of the more costly products times their respective shares of the market minus the average price of the less costly products times their respective shares of the market as perceived from the customers' point of view relative to the product in question."

PRESENTATION OF RULES

From the previous discussion of derivation of possible rules to define a served market for a given product in a multi-product company, the following guidelines are now postulated based on the foregoing discussions and personal experience of the author in administering the PIMS program in his company.

1. Set out what the product does and what it does differently or better than other products in the marketplace that may make it unique. Do this for the physical attributes of the product.
2. Given the properties of the product, ask what needs does the product fulfill and what other products available in the marketplace can fulfill those same needs. Whether or not one product can fulfill all needs or only one that should still be identified.
3. What needs does your product have the potential to fill, but there are no other products around capable of fulfilling? These should be identified separately from the needs that can be fulfilled by both your product and the competitors.
4. Taking each of the needs listed above, identify the competitor and the competitor's product that can fulfill each of those needs or several of them.
5. Now list the customers who buy the products in terms of customer types, or to put it another way, ask what do various customers do with the product once it is sold to them and group the customers into lists based on what they do with the product.
6. Go back through the customer list and combine those customers or customer groups who buy the product for fulfilling the same need so that the customer list is differentiated by needs just as the competitors are differentiated by fulfillment of those needs.

7. Match up the customer groups that have various needs and the competitors' products that can fulfill those needs. Don't forget to include the product in question as a competitor. This exercise forms a table which connects various customer groups to various competitor groups using the technology or the ability to fill a need as the connecting link between both the customers and the competitors.
8. Now that we have identified customers and competitors and linked them in a "served market," the differentiation process is used to subtract those products that do not rightfully belong in that served market. To do this, consider the extrinsic properties of the product such as price, quality, reliability, service, technical support, etc. Taking into account these particular properties of the product and the competitor, identify from the customer's perceived viewpoint whether or not each of theproducts in the served market under consideration is considered by that customer. If there are products that the customer is perceived not even to consider when he is making his buy decision to fulfill a given need, these products and competitors should be discarded from the served market.
9. The served market in terms of customers, competitors, products, needs, and technologies is now identified. Now, using the dollar-sales volume of the various competitors, one can get an idea of the served market

position that a given company holds; however, this will be distorted because of certain aspects of tactics such as price. Because we use the dollar as a common denominator to arrive at a market share, another factor must be introduced to adjust price. This price adjustment is the relationship in terms of percent that the price of a given competitors' product, yours or someone else's, bears to the mean price of the served market. It is used to normalize the quantities so that market share is always based on a mean market value of the product serving that market. This ties market share directly to physical output.

10. Calculate the market share.

In Rule No. 9 where the adjusted price is talked about relative to the mean price of the served market at that particular time, one must realize that we do not live in a perfect world and that the common adjusted price is more likely to be one that is compared to a mean price in the marketplace as derived from the point of view of the business that is doing the analysis based upon the price and market share that he has calculated for the competitors in that market. In most markets, this adjusted price will not vary more than 5-15 percent around the mean and so not much emphasis is necessary. Where the price of one of your competitor's products varies more than 15 or 20 percent from your price or the mean price as perceived by you of the served market, then a more careful

study is warranted so that the market share variable will not be too distorted because of price differentials between you and your competitors if the distorted price still leaves the product as a competitor.

PRACTICAL EXAMPLE AND PROOF

This section will take a product that exists today in a multi-product company and by use of the rules generated in Section III arrive at a market share for this product based on these consistent methods. Then this will be used as input for a PIMS model and compared to the market share given by that particular product manager's analysis to arrive at a difference in ROI between the two methods. The difference in ROI will indicate whether or not the market share arrived at using the above technique has fulfilled one of two postulates. These are:

1. By having a consistent market share across product lines, a more consistent comparison of market share is obtained.
2. A market share will be perceived to be better if by being generated through the use of a consistent set of rules, it returns an expected ROI nearer to the actual ROI than the market share used by the Profit Center not using these consistent rules but based on experience and hearsay.

The following example is taken from actual experience and will serve to illustrate the methods by which the postulated rules of this paper are used.

EXAMPLE 1

PRODUCT A

Product A is a component of a finished good which consists of the combination of Product A and another material supplied from other types of manufacturers. The product is sold nationwide, although due to freight limitations from the plant is divided into three geographic regions in which these exist separately with overlapping competitor and customer groups although the need for the product is limited to one major use that is served. The competition varies from local makers of similar products to other nationwide competitors for a sharp, easily defined set of customer groups, one for each region. The market position of this product was estimated at 21% nationwide with a relative position (our position divided by that of the top three competitors) of 27.1%. This resulted from past analysis and what salesman has been reporting. The Actual ROI of the business was 42.7 for the year used in this example.

A rerun of the market position analysis which was done by following the prescribed rules resulted in a similar result of market position at 26% and relative position at 33.5%.

It is debatable whether or not a difference of 5% of market position is statistically significant when there is only one example, but remember that the program compares the result against the mean of >2500 businesses which produces a rate of change of impact on ROI.

For the example discussed, the Limited Information Model runs are given in Table 6 and 7, using old and new market positions

respectively. The Impact difference was 1.6% of ROI due to purely marketshare influences and .4% of ROI due to interaction of market share and investment influences, resulting in the following comparison against ROI:

LIM ESTIMATED ROI

	Pretax % ROI
PAR Estimated ROI before using Rules	40.6
PAR Estimated ROI after using Rules	42.5
Actual ROI for the year	42.7

From this result, it is seen that the consistent application of rules across three geographic regions for a product resulted in a market position that is a closer predictor of ROI than the market position variables arrived at by the previous method.

While one example does not consist of positive proof, at the time of the writing it is the only fully-documented case available. It is planned to use these rules throughout the company to arrive at consistent, comparable market standings for our product. The evaluation of a strategic management planning system rests on credibility, communication, and commitment. Establishing comparable market positions that are credible is a small step, but a vital one in the development and evaluation of planning.

TABLE 1

New Product - The RX Lightbulb

A. What does it do: Uses electricity to provide light*

B. Basic needs fulfilled: Light an area adjacent to the lightbulb.

Other products that do this - battery-powered self-contained lights
- incandescent bulb
- fluorescent bulbs
- candle
- phospher panel

*To simplify assume "light" refers to radiation in the visible section of the spectrum.

TABLE 2

C. Specific needs fulfilled by our RX lightbulb.

a.
- light of 100 lumens is evenly cast over a circle 30 feet in diameter.
- the light cast is of a special color not to hurt the eyes.
- the electric consumption is 60 watts.
- the light screws into any standard socket.

b. Other products (taken from list in (B.).
- fluorescent bulbs
- incandescent bulbs

TABLE 3

Competitor Identification

Need	Competitors
100 lumen light	Company A, Company Y, Company W
Color of light emitted	Company W, Company A
60 Watt light	Company B, Company X, Company Y
Standard socket	Companies A, B

TABLE 4

Customer Groups

Customer Groups	Competitors In Each Group
Housing contractors	Company Y, Company A
House decorators - furniture stores	Company Y, Company X, Company B
Brokers - Reps., etc.	Companies X, Y, W, P
Office builders	Company Y, Company A

TABLE 5
COMPETITORS AND CUSTOMERS IN EACH SERVED MARKET

Served Market	Competitors	Customers
1	U.S. Company Y, A	Housing contractors and Office Builders
2	U.S. Company X, Y, B	Home decorators Furniture stores
3	U.S. Companies X, Y, B, A, W	Brokers, Manf. Rep., Distributors, Etc.

TABLE 6

LIMITED INFORMATION MODEL
WITHOUT RULES

FACTORS	PIMS MEAN	THIS BUSINESS	IMPACT OF FACTOR ON ESTIMATE OF ROI (%)	
Market Share (%)	23.6	21.0		
Relative Market Share (%)	61.7	27.0		
			-1.6	
Relative Product Quality	25.9	35.0	0.8	
Relative Price	103.5	125.0C	-0.9	
Percent Employees Unionized	48.3	51.1	-0.1	
% New Product Sales/ Sales	11.9	10.2	0.2	
R&D Expense/Sales (%)	2.4	0.4	1.3	
Marketing Expense/Sales (%)	10.8	9.1	0.6	

COMPETITIVE POSITION & ACTION IMPACT				0.3
Investment/Sales (%)	56.1	25.0		
Investment/Value Added (%)	96.7	60.0		
			9.8	
Fixed Capital Intensity (%)	52.3	39.6	0.5	
Vertical Integration (%)	58.8	70.0	1.1	
Value Added/Employee ($1000)	30.0	50.0	4.5	
Capacity Utilization (%)	79.6	94.0	1.8	

CAPITAL & PRODUCTION STRUCTURE IMPACT				17.7
Real Market Growth Rate	8.2	8.2	0.2	
Share of 4 Largest Firms (%)	56.5	98.5	1.6	
% of Customers = 50% Sales	12.2	16.2	-0.1	
Purchase Amount - Immed. Custs	5.2	6.0	-1.2	

MARKET ENVIRONMENT IMPACT				0.5
TOTAL IMPACT			18.5	
AVERAGE ROI, ALL PIMS BUSINESSES			22.1	

ESTIMATED ROI, THIS BUSINESS			40.6	

TABLE 7

LIMITED INFORMATION MODEL
WITH RULES

FACTORS	PIMS MEAN	THIS BUSINESS	IMPACT OF FACTOR ON ESTIMATE OF ROI (%)	
Market Share (%)	23.6	26.0		
Relative Market Share (%)	61.7	33.5		
			0.0	
Relative Product Quality	25.9	35.0	0.8	
Relative Price	103.5	125.0C	-0.9	
Percent Employees Unionized	48.3	51.1	-0.1	
% New Product Sales/ Sales	11.9	10.2	0.2	
R&D Expense/Sales (%)	2.4	0.4	1.3	
Marketing Expense/ Sales (%)	10.8	9.1	0.6	

COMPETITIVE POSITION & ACTION IMPACT				1.9
Investment/Sales (%)	56.1	25.0		
Investment/Value Added (%)	96.7	60.0		
			10.2	
Fixed Capital Intensity (%)	52.3	39.6	0.5	
Vertical Integration (%)	58.8	70.0	1.1	
Value Added/Employee ($1000)	30.0	50.0	4.5	
Capacity Utilization (%)	79.6	94.0	1.8	

CAPITAL & PRODUCTION STRUCTURE IMPACT				18.1
Real Market Growth Rate	8.2	8.2	0.2	
Share of 4 Largest Firms (%)	56.5	98.5	1.6	
% of Customers = 50% Sales	12.2	16.2	-0.1	
Purchase Amount - Immed. Custs	5.2	6.0	-1.2	

MARKET ENVIRONMENT IMPACT				0.5
TOTAL IMPACT			20.4	
AVERAGE ROI, ALL PIMS BUSINESSES			22.1	

ESTIMATED ROI, THIS BUSINESS			42.5	

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