SOME THOUGHTS ON THE FUTURE OF MARKETING MODELS

BY JAGDISH N. SHETH
UNIVERSITY OF ILLINOIS,
DEPARTMENT OF BUSINESS
ADMINISTRATION, URBANA, ILL.

Marketing models can be defined as formal and quantitative descriptions of the relationships between marketing control variables such as price, promotion, product or distribution and market responses such as brand loyalty, brand choice behavior, word-of-mouth communication, attitudes or awareness (Kotler 1971). There are at least four things which make marketing models somewhat distinct from other models.

First, marketing models explicitly or implicitly believe in multiple controls and multiple effects. For example, we often presume that marketing mix variables are either compensatory (additive) or synergistic (interactive) in their own relationships with market responses. Thus, free sampling or shelf display is often treated as a substitute for advertising in order to achieve the same type of impact. Similarly, product quality and price are often regarded as synergistic variables which combined together produce the price-quality relationship. We also believe in multiple effects of a marketing control variable. For example, the impact of advertising is not limited to generating new customers but also reinforcing or reminding existing customers as well as creating word-of-mouth communication. This multiple controls-multiple effects norm underlying marketing models, by definition, renders them as complex models requiring greater degree of theoretical and analytical sophistication (Sheth 1971).

Second, marketing models are often judged not based on their intrinsic logical reasoning or even on their empirical validation but on some external criteria such as generating a targeted amount of profits or rate of return on the capital. In other words, marketing models are often regarded as managerial means to achieve corporate objectives which are external to the models. This external judgment on the performance of the marketing models often makes it very difficult for a common consensus about their usefulness (Howard 1965).

Third, a vast majority of marketing models are models to represent aggregate relationships between marketing control variables and market responses in which the interest to understand individual differences is either totally absent or at best presumed away. The marketing models are, therefore, what the psychologist refers to as the Stimulus-Response (S-R) models which ignores individual differences or treats them as a black box (Sheth 1972).

Finally, marketing models are often built not only to establish the directionality of relationship between marketing controls and market response i.e. higher price will lower demand, but also to measure the magnitude of relationship i.e. every dollar of advertising will generate ten dollars of sales. This emphasis on measuring both the directionality and magnitude of relationship in marketing models has led to concentrating efforts on the impact of the quantitative force of marketing on market response at the expense of measuring the impact of qualitative aspects of marketing management.

The purpose of this paper is to critically examine the above four distinct attributes of marketing models from the perspective of model building activities in social sciences, and to examine what contributions the consumer theory has made in building better marketing models. In the process, we will examine the crucial question as to whether consumer theory is sufficiently developed to be modelable and useful to marketing management.

CRITERIA FOR EVALUATING MODELS

A model is a formal and quantitative description of the relationship between phenomena. Models can be classified into two broad categories. Some models tend to be highly structured and rigorously defined in order to understand both the directionality and the magnitude of relationship between phenomena. They invariably require either the deductive mathematical reasoning or the inductive statistical techniques depending upon whether the highly structured model is invariant or whether it is subject to outside unknown influences. The hard sciences often desire this first type of highly structured models based on mathematical deductive reasoning in order to provide vast applications of the fundamental elements of mechanics and chemistry for technological breakthroughs. For example, it is this type of model building effort which has produced airplanes, computers, and telephones.

While it is highly desired that we understand both the directionality and the magnitude of relationships between phenomena, this is not always possible. Often we are forced to limit our model building efforts to the second class of models in which it is only possible to measure directionality but not the magnitude of relationships. In fact, this seems to be the inevitable limitation of all social sciences as compared to hard sciences. Partly because we know little about the empirical realities and partly because of the inherent nature of the relationship between phenomena in social sciences, we find that most models in psychology, sociology, and economics can provide understanding of the directionality but not the magnitude of relationship (Schultz & Sullivan 1972).

The above description of models has three clear implications for marketing models. First, description of a phenomenon per se no matter how formal and quantitative does not constitute a model. Unfortunately, we use the term model very loosely in the marketing area and consider any formal or quantitative description a model. This is especially true with regard to the use of powerful multivariate statistical methods such as multidimensional scaling, cluster analysis and to some extent factor analysis which are all descriptive tools to formally and quantitatively understand the structure of a phenomenon. They are not models in the strict sense of the word since there is no intent in measuring relationship between marketing mix and market responses.

Second, even if we have formal descriptions of relationships between phenomena, it does not constitute a marketing model unless the relationship is anchored to marketing control variables on the one side and market response on the other side (S-R relationship). Formal relationships among marketing variables (S-S relationships) or among market responses (R-R relationships) cannot be considered <u>marketing</u> models although they are models.

Third, marketing models often desire measurement of both the directionality and the magnitude of relationship between marketing control variables and market responses which is an unrealistic dream. As a social science, our knowledge is not cumulative enough to imitate hard sciences. Unfortunately, the evidence of model building effort in social sciences and marketing is to the contrary. For example, learning curves in psychology, social class indexing in sociology and utility theory in economics are concrete evidences of unrealistic dreams. This has resulted in attempts to run before we learn how to walk and in the process losing managerial credibility. In other words, we often promise more than we can deliver to the management.

Let us now examine some common criteria with which models are generally evaluated and see how marketing models look from the viewpoint of these criteria. The first criterion is face validity. It represents the degree of consensus among researchers about the directionality and magnitude of relationship implied in the model. The criterion of face validity also includes the question of causality among those models in which one phenomenon is controlled by the other phenomena. Despite extensive model building efforts in the last one decade or so, there is very little consensus among researchers about the directionality and especially about the magnitude of relationship between marketing mix and market responses. We still don't know how advertising works, if at all, for example. This lack of consensus is quite understandable in view of the relatively young age of the discipline and therefore, there is nothing to be ashamed of. However, at the same time, we must face up to the fact that marketing models are at best tentative hypotheses not yet fully tested and validated as required in any model building activity.

The second criterion is construct validity. It refers to the development of proper rules of correspondence between phenomena and their measurement. It is encouraging to note that marketing models are quite good from the point of view of construct validity. We have developed good psychometric skills to measure both market responses such as loyalty, magnitude of consumption, attitudes, intentions and awareness and marketing control variables such as product attributes both perceived and real, pricing levels, distribution and media measures. Furthermore, we have good assortment of data banks to verify construct validity of marketing models.

The third criterion is model reliability. It refers to the stability of relationships among phenomena in the models. The stability of marketing models from situation to situation is however, extremely low. For example, we are as yet unable to provide stable price and promotion elasticities for a product across different situations.

The last criterion is predictive validity or the ability of the model to predict changes in the criterion phenomenon as a function of changes in the predictor phenomenon. Marketing models have a very poor track record of predictive validity. Numerous practical applications of marketing models in the area of price, media allocation, store location, and product development have consistently demonstrated that it is extremely difficult to predict the change in the magnitude of market response due to an experimental, planned change in the marketing mix variables. It is therefore, not an exaggeration to say that despite our sophistication in data collection and data analysis, most market successes are still by accident and not by plans.

In summary, the record of marketing models when evaluated in terms of the four criteria of face validity, construct validity, predictive validity and model reliability has been less than impressive. Only in the area of construct validity, marketing models have demonstrated sophistication comparable to more mature disciplines.

CONTRIBUTION OF CONSUMER THEORY TO MARKETING MODELS

The rapid and almost exponential growth in the knowledge of consumer theory in the last ten years has made significant contribution to the development of more realistic marketing models which are implementable in the industry and government organizations. Most of these contributions as will be discussed below, have been primarily in redirecting the modeling efforts and to some extent in improving the substantive bases underlying marketing models.

Perhaps the single most important contribution of consumer theory to marketing models has been in providing a well-defined structure of the black box which intervenes between marketing stimuli and market responses. In other words, consumer behavior theory has rightfully changed the interests and efforts of model builders from developing S-R models to S-O-R models by successfully arguing that the same stimulus often produces very different responses depending upon the psychological and situational make-up of the consumers in the market place (Howard & Sheth 1969). The consequences of this shift a.e easy to speculate: (a) divorce from the economic and sociological thinking with greater emphasis on the psychological profile of customers which has brought marketing models closer to reality; (b) greater usage of disaggregate data with the individual customer as a data point in place of aggregate time series data; and (c) greater emphasis on market segments and building marketing models for these segments which has made marketing models more appealing to management.

A second major contribution of consumer theory to marketing models has been the reorientation of managerial perspectives and objectives. Consumer behavior theory has formally introduced customer-oriented marketing objectives and planning among corporate managers so that the marketing models are less evaluated on profitability and other economic considerations and more on legal, political and social consequences of doing business. It is our contention that this shift in corporate objectives which is slow but real will increase the need for market research and marketing models among management personnel since they can no longer rely on technology for their answers. Similarly, consumer behavior theory has also provided a common perspective and vocabulary to management which is bound to ease the problem of communication between marketing model builders and users (Sheth 1974).

A third major contribution of consumer theory to marketing models is in consciously bringing the realization to model builders that consumer behavior is complex and that any simplified surrogate modeling won't work. In fact, it is no exaggeration to state that marketing models which were primarily anchored to techniques of operations research have been saved from total rejection by management partly by the timely rethinking and refinements in model buildin encouraged by consumer behavior theory. The recent shift from techniq oriented model building to more empirical and statistical analyses c market realities and inductively building models specific to a compa or product are clear examples of this reorientation. It is indeed fortunate that the trend of blindly borrowing concepts, theories, tools and techniques from other disciplines has considerably subsided in marketing models and the effort is directed more toward providing research answers to managerial questions in a problem-solving way (Sheth 1971).

CAN WE SUCCESSFULLY MODEL CONSUMER BEHAVIOR?

Despite rapid strides in the theory and research of consumer behavior, it seems premature that consumer behavior can be successfully modeled in a way that management will use it. There are at least five major reasons which still impede the development of successful models of consumer behavior.

The first major stumbling block is lack of proper linkage between consumer behavior theory and marketing mix variables. Granted we know quite a lot about consumer behavior today. However, much of this knowledge is strictly descriptive and at best tells us the process of decision making consumers tend to follow when they are faced with choices. There is very little knowledge which provides insights into the relationship between marketing mix variables and the consumer decision-making process. All the major theories in consumer behavior including the Howard-Sheth theory are extreme weak in providing managerial strategic implications of consumer behavior knowledge. Until more research is carried out to link managerial decision-making with consumer decision-making, it will be difficult to successfully implement marketing models of consumer behavior.

A second and closely related impediment is the prevalence of technical and financial orientation of the management. It is still difficult to find top management totally dedicated to customer-oriented marketing. Under these circumstances, it is unlikely that the management will take the initiative to learn consumer behavior theory and incorporate in its strategic planning. To be sure, every manager has a pet theory of the market place but often it is a partial theory based on fragmented and ad hoc experiences with market realities. It is extremely difficult to discard pet theories developed on personal experiences in favor of some generalized knowledge about consumer behavior. Only with rude awakening provided by serious market failures will the management catch up on learning about consumer behavior theory.

A third major problem is that consumer behavior theory is itself not fully validated as yet. Despite pioneering efforts of several scholars in marketing in integrating diverse findings and theories, consumer behavior theory is still lacking in face validity, construct validity and predictive validity. Not enough research is yet undertaken to test some well-known theories of consumer behavior and to revise them, if necessary, based on empirical research. In fact, only the Howard-Sheth theory has been tested empirically with somewhat mixed results (Farley, Howard & Ring 1974). It seems unlikely that we would be able to successfully model consumer behavior until theories are fully validated.

A fourth and related problem is lack of psychometric scales to properly measure some of the psychological constructs in consumer theory. Once again, it must be conceded that our knowledge to measure constructs such as attitudes, choice criteria, perceptual bias and satisfaction has been phenomenal but not enough to permit model building (Sheth 1974).

The final stumbling block lies in the extraordinary expectations of model builders and users. Despite the fact that human behavior is exceedingly complex, not well understood, and insufficiently researched, there is still the hope on the part of managers and researchers to build models which will give them understanding of both the directionality and the magnitude of impact of marketing variables. It is not an exaggeration to state that often the management desires to be in the position of an airplane pilot with all the controls at its command to make the plane fly as it wishes. And this wishful thinking is not limited to management but extends among the model builders. It seems only realistic that both management and model builders lower their aspirations and concentrate on those marketing models which will provide insights into the directionality of relationship between marketing efforts and market responses.

SUGGESTIONS FOR BETTER IMPLEMENTATION OF MARKETING MODELS

In order to make marketing models of consumer behavior more usable by the management, several changes have to be made in model building.

The first and foremost change is to shift the emphasis from building optimization models to building problem-input models. So far the model building effort has been mostly technique-oriented in which managerial problems have been twisted, turned and modified to suit the requirements of the techniques. Examples abound in the applications of linear programming and stochastic processes. Since it is unlikely that management will replace its judgment with marketing models, it seems best to take the customer-oriented approach and work backwards by first understanding managerial tasks, needs and objectives. The problem-oriented model building effort is likely to produce somewhat less sophisticated models but they are likely to be more used by the management as inputs to its decision making. It is no use building highly sophisticated models which optimize every managerial task and threaten to replace management itself so long as management has the upperhand in the organization (Ackoff 1970).

A second suggestion is to concentrate more effort on display and communication of marketing models. It is very surprising to find that many a research manager highly competent in model building is often unable to communicate his models to management. Not enough attention has been paid both in education and in practice on the art of information display and communication. It is no exaggeration to state that half the battle is lost if the model is not properly communicated. We need a crash program of research and training on the ability to display and communicate if marketing models are to survive in the practice.

A third change necessary for successfully implementing marketing models in practice is to lower the aspirations and concentrate on those areas of consumer behavior where face validity and construct validity are well researched. This is likely to shift the model building efforts from optimizing levels of marketing activities to providing only the directionality of activity to management. Thus, it seems more fruitful to utilize designs and principles of analysis of variance which limit the scope of model building effort to one of testing significant differences at different levels of marketing effort.

A final suggestion for successful implementation of marketing models is to systematically incorporate the philosophy of market segmentation in model building activities. Even though there is a definite shift from aggregate to disaggregate model building, it is not enough. In the long run, building marketing models for market segments is more likely to be used by the management since it often parallels managerial philosophy.

REFERENCES

Ackoff, R.L. A Concept of Corporate Planning. Wiley Interscience, 1970.

Farley, J.V., Howard, J.N. & Ring, L.W. Consumer Behavior: Theory & Applications. Allyn & Bacon, 1974.

Howard, J.A. Marketing Theory. Allyn & Bacon, 1965.

Kotler, J.A. Marketing Decision-Making: A Model Building Approach. Holt, Rinehart & Winston, 1971.

Schultz, R.L. & Sullivan, E.M. "Developments in Simulation in Social and Administrative Sciences", in Guetzkow, Kotler & Schultz (eds.) Simulation in Local and Administrative Sciences. Prentice-Hall, 1972, pp. 3 - 50.

Sheth, J.N. "Multivariate Revolution in Marketing Research", in Journal of Marketing, 35, 1971, pp. 13 - 19.

Sheth, J.N. "Marketing Models of Competition" Review Paper presented at Chicago TIMS/ORSA Tutorial, 1972.

Sheth, J.N. Models of Buyer Behavior. Harper & Row, 1974.