A STUDY OF MARKETING GENERALIZATIONS

Scientific Generalizations

WHY is it that when marketing researchers think of philosophers of science they are more likely to recall the ideas of Kaplan, Blalock or perhaps Popper rather than, say, Hume, Whitehead, or even Einstein? How is it that scientific generalizations, the bedrock of knowledge in natural science, are so elusive in marketing literature? When will marketing scientists, so presently occupied with the development of methodology, turn to the fundamental question: What do we know about marketing behavior?

The answer to each of these questions is complex, but a simple insight comes from the fact that we have generally relied on what may be called "derivative" sources for our methodology and philosophy of method. In short, we have borrowed without examining deeply enough the nature of the debt. Let us be clear from the onset that we are not referring so much to the work of individual researchers or to such introspective works as Zaltman, Pinson, and Angelmar's (1973) treatise on methodology, or more recently Hunt (1976), as we are to the general residual, such that it is, of marketing "knowledge." This body of knowledge, method and their theory is, unfortunately, meagre, ill defined, and, interestingly enough, unappreciated.

In 1964, Bernard Berelson and Gary Steiner published Human Behavior: An Inventory of Scientific Findings, a commendable (and not controversial) effort to pull together what was then known about human behavior. Their purpose was to report on scientific generalizations, i.e., laws of behavior. All modern science, particularly natural science, has been characterized since 1600 by a conception of Galileo: that the first goal of science is to describe phenomena independently of any explanations. In this scheme, which accounts for the success of the "exact" sciences (cf. Kline 1953), speculation on why something happens necessarily follows documentation on how something happens. So Berelson and Steiner tried to duplicate the inventory of knowledge that seems to accumulate so (deceptively) easily in the natural sciences.

We initiated a similar search for marketing knowledge a few years ago; in fact, a book was planned for a series on marketing theory. It soon became apparent, however, that when the same standards used to define generalizations in other...
fields were applied to marketing, our scientific foundation appeared to be more marsh than bedrock. This paper is one outcome of that project. In it, we hope to illustrate the process by which marketing knowledge can be formed, if not gathered.

Some Qualifications

As we have noted, it is not presently possible to provide on paper an inventory of scientific generalizations in marketing. The fact that so few studies replicate and thus may corroborate earlier (tentative) findings is, it turns out, the least of all problems associated with this task. The greatest problem is the lack of conformity of methodology and hence definition of what can legitimately be considered "evidence" for generalization. A smaller problem is the apparent confusion that surrounds the idea of generalization in marketing vis a vis the development of marketing theory.

Two points about knowledge versus empirical research need to be clarified. First, a reviewer commented that "... there seems to be no attempt to present a balanced analysis of support for and against each of the generalizations" in this paper. But when there is both support for and against an empirical statement, there is no generalization! Boyle's Law is a scientific generalization precisely because it summarizes, for certain well-defined conditions, the inverse relationship between pressure and volume for a fixed weight of gas. The evidence supports this statement; that is why we call it a law. Otherwise, it would still be Boyle's hypothesis or, worse, Boyle's folly.

Second, and this follows from our first point, a study of marketing generalizations is different in kind from a literature survey of empirical results. Reviews of empirical literature on a given subject should and do cover the gamut of research experience. But review articles (and this is mostly their purpose) tend to raise more questions than they answer. They are excellent guides to future research. Surveys of marketing generalizations, on the other hand, take stock of what we really know about marketing. The work of Ehrenberg (1966, 1972) provides an exemplary case of defining marketing knowledge. If a student or colleague asked you what is a generalization (not theory, not hypothesis, not proposition) in your own area, what would you say? What could you say? This is exactly the distinction between knowledge (generalization) and a series of research findings.

So for marketing we have the following situation: there is a great deal of empirical research, but very little is generalizable. Hence, we have very little knowledge of marketing phenomena. As we search for generalizations, we should not be unduly concerned with methodology per se, particularly since marketing research tools are in a state of evolution. It would be nice to evaluate the validity or reliability of every study (assuming that an observer could even do this), but whose methodological bias are we to choose as "correct"? Should we only admit as evidence of generalization the results of experiments? Or econometric studies? Or, more specifically, field experiments? Or "state-of-the-art" econometric/time series studies? Who, in other words, is to judge what is good or bad?

Because we feel that it is far more useful to marketing science at this stage in its development to produce knowledge and not simply more hypotheses or methodology, we propose a scheme for weighing evidence that, if anything, tends to err on the side of admitting a finding as positive support of a proposition. By defining replication and corroborate broadly, we hope to illustrate that, even in such a widely researched area as sales response, our knowledge is thin. The attempt to lay out what we know about marketing should be at least as important, if not more so, as our continual attempts to expand the boundaries of marketing theory.

Evidence and Generalization

A final preliminary consideration is how a statement is to be regarded as an empirical generalization, i.e., how is it to be tested and how is the evidence to be weighed? Given any two concepts, A and B, we may be interested in the proposition (hypothesis), if A then B. This could be written as a mathematical expression of the form B = f(A). Through well-defined correspondence rules, we would find the operational form of the proposition, B' = f(A'), where B' and A' are the constructs which are purported to measure B and A. It is this class of operational propositions which can be tested (which are capable of being falsified) and should command our attention.

A scientific test of an operational proposition will be defined as a "method" of bringing evidence to bear on a "situation" of the proposition. These methods can range from simple observation of nonexperimental data to analysis of experiments or axiomatic systems. In a general way, we can

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1 Some readers who might find fault with us for discounting the technical specifics of each reviewed study might be willing to serve on such a court, but this is a two-edged sword; the more deeply one looks into an econometric study, for example, the more doubts one may have about its particular validity. It is better to look at the forest now inasmuch as we have already seen so many trees.
spoke of the viewpoint (bias) of an observer-researcher as instrumental to the “method,” while the “situation” refers to a particular empirical form of the proposition. For example, if Sales = f(Advertising), then an empirical form of this proposition would specify both the mathematical and substantive conditions of the proposition. One such form could be Sales = α Advertising with α and all of the conditions under which this relationship is expected to hold specified.

Three different tests can be specified:

- **Experimental Replication**: same “method”—same “situation”
- **Nonexperimental Replication**: same “method”—different “situation”
- **Corroboration**: different “method”—same “situation,” and different “method”—different “situation”

To illustrate, consider again the relationship between advertising and sales. In experimental replication the same experiment is conducted more than once, although there can be (especially with social systems) no perfect replication. In nonexperimental replication, the same method (econometrics) is applied to different situations (data). For example, the finding that advertising was related to sales holds for a number of situations, e.g., markets, products, etc., will be classified as nonexperimental replication. The “method” could be simple observation of nonexperimental data, but it would have to be extended beyond the original data. In corroboration, an experiment concerning sales and advertising may augment the finding of a regression study for the same situation. Alternatively, different methods may be used to generalize from a variety of situations. Notice it is the case of different situations which leads implicitly to broader generalizations.

If one or more of these tests is applied to an empirical proposition, then a positive result will be called a scientific generalization or a scientific finding. A negative result will produce something akin to a historical fact. This approach to testing generalizations is compatible with Simon’s (1968) notion that a generalization is falsifiable or testable when “(a) it is extended beyond the data from which it was generated or (b) an explanatory theory is constructed from which the generalization can be derived, and the explanatory theory has testable consequences beyond the original data” (p. 449). This has been seen in the work of Bass and Parsons (1969) where they employed Basmann’s (1965) concept of predictive testing in simultaneous-equation regression analysis.

**Findings On Sales Response**

The influence of marketing mix variables on sales is a matter of scientific and practical interest and there is a growing research tradition in this area. The only prior attempt to collect scientific data on sales response was by Clarke (1976). He presents a discussion of the literature concerning cumulative advertising effects and the important question of the duration of advertising effects. Using the criteria of evidence that we have set forth, we present research findings that represent scientific generalizations in this area. Since this is an illustration, we focus on aggregate sales or market share response to advertising expenditures, distribution, and shelf space. Although we make no claim of completeness, these three marketing decision variables have been rather thoroughly explored and our lack of comment on all other marketing mix variables except price is due to lack of evidence. The effect of price and product-related price elasticities is widely reported in the economics literature. In the marketing literature, Monroe (1973) provides a review of the studies concerning individuals’ perceptions of price.

There are no universal generalizations in marketing. When we report, for example, that advertising has a positive influence on sales, we do not imply that this is true in every circumstance. It simply means that there is corroboration for this proposition from a number of sources for particular types of goods. The conditions under which the generalizations hold are, strictly speaking, limited to the evidence reported herein.

In conducting our search, a number of studies could not be used to substantiate the generalizations being studied. These ranged from one which reported no parameters at all (Rao 1972) to those that were internally inconsistent. For example, Sexton (1970) reports both positive and negative results and most of the coefficients as not significant.

We do not report any evidence for carryover effects of advertising or advertising goodwill, although they clearly exist and have been reviewed by Clarke (1976). We also do not report on the various types of models employed by the various researchers. It has been shown that the Koyck, partial adjustment, and customer holdover models are observationally equivalent; however, the implications of the models are quite different from a theoretical point of view. In addition, model estimates may be biased due to specification problems such as multicollinearity, which arises with polynomial lag models, aggregation bias, failure to consider the simultaneous nature of sales and ad-
vertising, or failure to account for serial correlation. These problems have been discussed in both the econometric literature (Theil 1971, p. 540) and in the marketing literature (Clarke 1976; Houston and Weiss 1975; Parsons and Schultz 1976). Many of the articles presented represent attempts to solve some of these problems. For example, the degree of statistical sophistication evident between the earliest work of Palda (1964) and the recent work by Leone (1978) is representative of attempts to find better estimates of advertising effectiveness. These problems exist and deserve to be brought to the reader’s attention, but the statistical sophistication of the works will not be compared, only the results.

To simplify the findings, we regard sales and market share as equivalent measures of “sales” response. The qualitative impact of the marketing mix variables has not been considered, largely because it has not been studied since Buzzell (1964) found that the content and presentation of advertising messages, as reported by the Schwerin Research Corporation test for measuring the effectiveness of television commercials, is related to short-term changes in market share. Finally, the amount of advertising is measured by advertising expenditures and the elasticities we report are short run.

A1. Primary advertising has a direct and positive influence on total industry (market) sales.

To test this proposition, data on generic advertising and total industry sales of a product are needed. The main support for this generalization consequently comes from studies of trade association advertising, as for beverages or fruits. Evidence comes from Nerlove and Waugh (1961) for oranges; Hochman, Regev, and Ward (1974) for orange juice; Ward (1975) for grapefruit juice; and Thompson and Eiler (1975) for milk. Somewhat weaker evidence is reported by Ball and Agarwala (1969) for tea. Although it cannot be generalized, Nerlove and Waugh report a short-run advertising elasticity of .17 for oranges.

Employing data at the brand level, Clarke (1972) and Leone (1978) studied the competitive environment for a frequently-purchased good which can be placed in well-defined industry categories. Both of these studies found that the advertising of an individual brand, along with stimulating selective demand, tends to increase industry sales of other brands within a category, or a form of the primary demand effect.

It should be mentioned that Schultz and Wittink (1976) have developed a theory for testing the effects of industry advertising which can be used to investigate the influence of selective advertising on primary demand. While it was not applied, it provides an interesting analytical framework for investigating this question.

A2.1 Selective advertising has a direct and positive influence on individual company (brand) sales.


This research area represents the strongest generalization since it passes the strongest scientific test. That is, these articles represent studies which employed simple regression (Palda 1964), used simultaneous-equation regression analysis (Bass and Parsons 1969), attempted to adjust for serial correlation problems (Houston and Weiss 1975), and employed Box-Jenkins analysis (Helmer and Johansson 1977), not only on different data bases which provided supporting evidence, but also on the same data base (i.e., Lydia Pinkham). Therefore, we find both nonexperimental replication and the strongest form of corroborating evidence.

A2.2 The elasticity of selective advertising on company (brand) sales is low (inelastic).

For frequently purchased branded goods (FPBG), excluding cigarettes and gasoline, reported elasticities range from .003 to .23. For all products, all elasticities are less than .5, as can be seen in Table 1. It should be noted that some of the elasticities in Table 1 come from direct measurements, such as double-log regression equations, and others are derived from the parameter estimates from other types of models.

B1. Increasing store shelf (display) space has a positive impact on sales of nonstaple grocery items.

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2 The articles reported in support for the following generalizations have been uncovered after a thorough search through academic journals, as well as professional meeting proceedings and working papers. It is, however, possible that some material was unintentionally overlooked, and to the author(s) we apologize.
The research investigating the relationship between shelf space and sales has concentrated on determining the existence of a relationship, rather than measuring its magnitude. In one of the earliest conceptual works in this area, Brown and Tucker (1961) proposed that for some products, sales were related to shelf space by an increasing concave function that reaches a maximum at some finite amount of shelf space. Cairns (1963, p. 43) concluded in another theoretical paper, "The more space allocated to an item, the more likely it is to be seen by a shopper, and, hence, the more likely to be purchased. This is particularly true in the case of items likely to be purchased on impulse." However, Cox (1964) found little difference in the sales of impulse goods and staples when shelf space was varied. Then, in a latter study (Cox 1970), a difference was found between various impulse goods contingent on whether an individual had a high or low acceptance for the brand. This divergence between the theoretical and empirical works led Anderson (1979) to state, "The literature concerned with the conceptual development of brand demand as a function of display area shows a higher degree of consistency than does the empirical research done to test various functional specifications."

Nonetheless, the empirical research in this area is in general agreement that there is a positive relationship between shelf space and unit sales. The evidence does point out, however, that this relationship is not uniform among products, nor across stores. Support for this comes from Cairns (1962), Chevalier (1975), Curhan (1972, 1974a, 1974b), Frank and Massy (1970), Kennedy (1970), Kotzan and Evanson (1969), Mueller, Kline, and Trout (1953), Pauli and Hoecker (1952) and Progressive Grocer (1963–64). Table 2 provides a list of these works and the products used in the studies.

It should be mentioned that this area has also
not escaped methodological criticism. Peterson and Cagley (1973) pointed out some of the statistical problems with these studies, as well as the possibility of a nonlinear relationship existing between sales and shelf space. Lynch (1974) criticized studies in this area for failure to develop any theory of what was found and the possibility of the existence of a simultaneous system of equations.

C1. Distribution, defined by number of outlets, has a positive influence on company sales (market share).

This generalization is supported by the work of Parsons (1974) who investigated a frequently purchased branded good newly introduced on the market and Lambin (1972a) who investigated gasoline station locations. Although the magnitude of the elasticities is not generalizable, Lambin found elasticities of .15 and .59.

### Discussion

It is clear that empirical generalizations in marketing can be sorted out from historical facts and from theories and speculations. But what are the implications for the practice of marketing research? There seem to be two main points: the first relates to knowledge gaps and the second to replication studies.

By specifying what is known about marketing behavior, the vast gaps of what is not known are revealed and an agenda for future research is provided. For example, in the area of sales response, we have very little knowledge of the effects of marketing mix variables other than advertising. We know almost nothing about the interaction effects of these variables. And for marketing decision variables such as sales force effort, there are virtually no generalizable results.

A research editorial (Boyd 1976) recently noted that “too often manuscripts tend to replicate earlier studies with but a small difference in either the research design or in the product class involved.” But we have seen that replication is the key to generalization for without it, in the broadest sense, we have no corroboration of research results. We are left with one-shot studies that represent historical facts. Only by extending findings to other data sets do we perceive the generality of marketing relationships.

A final point about theory is essential. Marketing theory provides the means for interpreting the laws and facts of marketing behavior. But theory devel-
development depends on current marketing knowledge. Basic answers to questions of how marketing variables are related lead logically to new questions of why they are related. Like our fellow scientists, we must first describe marketing behavior in order to bring us closer to explaining it.

REFERENCES


Chevalier, Michel (1975), “Increase in Sales Due to In-Store Display,” Journal of Marketing Research, 12 (November), 426–431.


Kline, Morris (1953), Mathematics in Western Culture, New York: Oxford University Press.


— (1977), “Advertising Increases Sensitivity to

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