PURCHASE PROBABILITIES AND INTENTIONS

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A. INTRODUCTION

There are many factors affecting the degree of success of any economic unit. These factors can be divided in two major categories : the controlled and the uncontrolled ones. If an economic unit can influence, through various actions, one of these factors in order to expect, with high degree of certainty, favorable interaction(s) or result(s), then this factor is a controlled one. In cases where the degree of certainty is low, very low or even inexistent, we talk about uncontrolled factors. The criterion, therefore, of separation is the degree of certainty or its opposite, the degree of uncertainty.

It should be noted, that the distinction between the two categories of factors is neither clear cut nor stable. Depending on the specific situation as well as the progress of scientific thought, the factors can be easily reclassified. It will not be an exaggeration if we support than as time passes the tendency is more and more factors to abandon the uncontrolled category and switch to the controlled ones.

Any attempt to list and describe these factors could be exhaustive. It is not also in the scope of this paper. Our attention will be concentrated in only one of these factors, the forecast of sales. Forecasting of sales has traditionally attracted the interest of scientists and practitioners alike. Measured on macroeconomic or microeconomic terms, future sales of a specific product, or brand can effectively assist the management of the national economy or of the producing unit. Accurate prediction of sales for the next month, few months, year and even years, can be used by management as a crucial input in their desion making process. Forecasting of sales has tremendous impact on selecting

(planning), organizing., implementing and controlling the appropriate marketing mix of a company.

It is because of this cruciality why an increasing number of scholars decided to reallocate the emphasis from tactical to strategic planning. Sales forecast is an element of strategy rather than tactics. Referring to the retailing sector, McCammon (20), stressed that in the near future strategic planning will be the name of the game.

B. SALES FORECASTING APPROACHES

In looking back over the research done on sales forecasting, we can identify four major approaches. From a historical perspective, the sequence of these approaches constitutes evolutionary stages. Studying these approaches or models, the derived conclusion is that the achievement of high levels of accuracy is the striving force.

Forecasted sales can refer to various categories of products. Of prime concern is the category of goods. According to the definitions adopted by the American Marketing Association (7), we have the following classification system :

Convenience Goods: Those consumers' goods which the customer frequently, immediately purchaseswith the minimum effort.

Shopping Goods: Those consumers' goods which the customer in the process of selection and purchase characteristically compares on such bases as suitability. quality, price and style.

Specialty Goods: Those consumers' goods on which a significant group of buyers are habitually willing to make a special purchase effort.

Although there are critics against this classification (4), from the above definitions becomes apparent that purchase intentions refer more or less to the non-convenience goods. Therefore, sales forecast approaches that base their estimates on purchase intentions cannot be applied, unless drastically modified, to convenience goods.

The sales forecasting approaches are the following four :

Subjective Assesment Approach

According to this approach, which dominated the empirical studies in the late 1950's and early 1960's, buyers' intentions concentrated the focus of attention. The aim was to find a measure of itentions and relate this measure to the actual purchases. Sales forecasting therefore, was based on data derived from a panel of purchasers, who assessed their subjective intentions. The necessary informations were acquired through a questionnaire.

Having in mind the Fishbein's (10) theory on intentions, a person's intention to perform any behavior is determined by his attitude toward performing the behavior (A_B) and by his subjective norm (SN). A person's attitude toward a specific behavior (A_B) is proposed to be a function of the perceived consequences (or outcome) of performing that behavior and of the person's evaluation of those consequences (or outcomes). The subjective norm (SN), is the person's perception that most people who are important think he should or should not perform the behavior in question. SN is determined by the perceived expectations of specific referent individuals or groups and by the person's motivation to comply with those expectations.

It is important to note that additional variables, external to the model, can influence intentions only indirectly., by influencing either of the two components or their relative weights.

The consumer's intentions approach was based, almost totally, on the work done by the University of Michigan's Survey Research Center, Economic Behavior Project. Katona and Mueler (17), utilizing the data of the above Center, tested the following hypotheses concerning the decision making process, as it relates to the purchase of durable goods :

H1. The degree of deliberation, concerning a purchase, increases as the economic size of the purchase increases.

H2. The degree of deliberation is inversely related to the size of the household's income.

H3. The degree of deliberation varies directly with the educational level of the household.

H4. The degree of deliberation varies inversely with the urgency of the need for the durable good.

The results of the study were intriguing. Hypothesis one was accepted. Indeed, there appeared to be a relationship between the economic size of the purchase and the degree to which the family deliberated about it. Regarding the rest of the hypotheses, it was found that the higher the family's income level the greater they tended to exhibit features of deliberation, also, the higher the educational level attained by the household's head the greater the household tended to exhibit features of deliberation, finally, the greater the urgency of the need the shorter the length of the deliberation period.

Although Katona - Mueler study had been a one - interview post - purchase study, anotder study by Ferber (9), used the method of repeated interviews with the same households. Ferber, tried to find answers in the following questions :

1. For what types of goods are purchases planned?

2. What is the economic horizon for durable goods purchase plans?

3. What is the relationship, if any, between durable good purchase planning and population grouping?

4. With what as surances are plans made ?

Ferber's study found that almost all durable goods purchases involving more that $ 25 were planned at least one month in advance. The planning horizon tended to lengthen as the economic commitment increased and income also increased. He also found that planning rates were not uniform across population groupings — younger families, more affluent families, families in the professional or managerial classes and families apprehensive about the future tended to plan a greater number of their purchases—. He also found that planning and purchasing activities were fairly closely related. Finally, concerning the assurance about the possibility of plan fulfillment, in cases where a date of expected purchase was given, almost the 3/4 of them purchased that item. On the other hand, when plans were rated as «sure» but without a date, the fulfillment rate was 33 %.

It is interesting to note that both the above studies tried more to enlighten the consumers' decision making process and less to correlate consumers' pur-

chasing intentions and forecasted sales. The latter was attempted by Klein and Lansing (19), who afrter collecting subjective assessments of consumers on a number of different questions, they formulated the results into an «Index of Consumer Attitudes». The technique was to take the Index values generated by different socio - economic - demographic groups and to compare these Index values with subsequent levels of durable goods purchases. Namias (22), used this technique to correlate purchasing intentions and actual purchases. The discrepancies between planned and actual purchases were attributed to the various demographic characteristics of the families interviewed, as well as to how these families perceived some socioeconomic magnitudes.

Aggregative Demand Approach

While in the Subjective Assessment Approach sales forecasting was heavily based upon the consumer's ability to assess subjectively his purchase intentions, the Aggregative Demand Approach totally ignores him. Instead of the individual consumer, rational aggregates of consumers are used as the basis for sales prediction. The final outcomes of these marcro approaches are mathematized models expressed in a functional relationship form, with the dependent variable being the magnitude of sales volume in a future time period and the independent variables being a host of macroeconomic parameters and variables.

Examples of these approaches can be found in the research studies of Houthakker and Taylor (12), and Sindlinger (23), to mention only two.

Probabilistic Intentions Approach

This approach can be regarded as the natural evolutionary step of the Subjective Assessment Approach. The timing of this approach was accelarated after Tobin (23), exposed the time series - cross section paradox.

Juster (15), found that there was a significant difference in the rate of the purchase plan fulfillment between those who had been «definite» about their purchase intentions over the planning horizon and those who had been «less definite» or «probable».

Katona's (18) explanation was that both intentions and expectations were essentially attitudes with a time dimension attached.

Juster on the other hand, using again the time dimension element, contended that forward looking variables like intentions and expectations are fundamentally different from attitudes, in that they express subjective judgments, held more or less with certainty, about future events.

Ferber (8), using the explanation given by Juster, made a panel study of St. Louis families collecting purchase intentions data in terms of the respondent's subjective probability that the purchase will be made. In his questioning on purchase plans over a six months time horizon, he gave to the respondents a list of durable goods and a device he called a «Plan - O - Meter», which contained gradations from zero to one. He then elicited purchase likelihood on the basis of this device, explaining to the respondents that a. «2» on the card represented two chances out of ten that the item would be purchased.

Ferber found that there was a greater tendency for purchase plans to be fulfilled that had been reported with a higher probability.

Following Ferber's work, Juster (16), published the results of an experiment in Survey design, aimed at determining, if possible, the relative value of the various intentions measurements. Two of his technique findings are of major importance : 1. Respondents when asked if they «expect» or «intend» to buy product X during the next, say, six months, they are not sure what do you mean. In cases of verbal or written communication (interview - questioning), problems of doubtful interpretation of conceptual semantics, should be eliminated. 2. Questions should be addressed only to those prospective purchasers that have received some de- examination within the household's decision framework.

Juster, went further to test which approach is superior, the Nonprobabilistic (traditional) or the Probabilistic one. He collected information both on the basis of intentions and on the basis of subjective probability assessments about purchases. These data were collected on three time horizons : six, twelve and twenty four months. Also, the probability information was collected in two sets : one, on a purely numerical basis in one of the surveys and, two, on a numerical-descriptive adjective basis in the other survey. Based on his findings, Juster concluded that :

1. Using probability data for purchase intentions, significantly increased his ability to predict purchase rates.

2. Adding traditional intentions measures to the probability measures, added nothing to its predictive ability.

3. On balance, families tend to have a conservative bias (underestimating) in their responses to probability questions.

Probabilistic Patronage approach

In the previous three approaches (one probabilistic and the other two nonprobabilistic), sales forecasting was referring to a specific product category. If our aim is to forecast the sales for a specific : 1. Time period, 2. Brand and, 3. Store, then, we can use the Probabilistic Patronage Approach.

In the Granbois and Willett research (11), respondents were asked, among other things, to give the chances out of ten that they would purchase any one of the listed goods, and brands. Similarly, they were also asked where (in which store), and when they will buy this specific brand of the good. Although the study's main purpose was to prove that this approach was more accurate in predicting that the preceded one, its findings only partially justify its superiority.

C. SUPPLEMENTARY RESEARCH

The momentum of sales forecasting approaches is continuing but still lagging in comparison with the bibliography of other Marketing related topics. It looks as the attention is oriented more towards in increasing the sales of a product rather than in forecasting how much the sales will increase. Searching the current bibliography., we found some articles that directly or indirectly supplement, more or less, the above briefly described sales forecasting approaches.

Ask the Right Person

Buying intentions, expressed either verbally (Idefinetely plan to buy it) or numerically-probabilistically (Four chances out of ten, I will buy it), referring

either to a specific product (television set) or a specific brand (Admiral television set), and covering various time horizons, are notified through a verbal or written communication. The researcher questions the person of the household who, according to his beliefs, will be the actual purchaser or at least he will drasrically influence the purchasing decision. But purchasing roles change, following the corresponding changes of the social, economic and cultural environment.

Cunningham and Green (6), comparing the results of two studies of 1955 and 1973 regarding the purchasing decision roles in the U.S. family found some important changes. These changes ranged from dramatic (for the case of automobiles), to insignificant (for the case of insurance). The major implications of these findings to marketing management is, according to the authors, that it is difficult to generalize the impact that changes in the environment will have on family purchasing patterns. While family decision making roles have been changing in response to environmental change, all products apparently have not been affected in the same way.

In the case of sales forecasting, attention should be directed in asking the purchase of a good. Otherwise, the linking between intention and purchase probability would be jeopardized.

The Time Horizon

Theoretically, and having in mind the going concern of an economic entity, sales forecast can refer to any time horizon. But in a world of volatile and frequent environmental changes, the intrusion of unanticipated events diminish the usefulness of any forecast attempt. Therefore, we can forecast sales for the next, say, ten years, but what is the reason ; actual sales, most probably, would be far different from the forecasted ones. As Howard and Sheth (13) stated :

> ... «To the extent that the lag is greater between the measure of the intention and the act of purchase, greater discrepancies between the intention and purchase would be expected, because the buyer must anticipate environmental changes that will occur after the intention measure and before purchase. The longer the period of anticipation the greater we would expect the anticipation to err.»

According to Clawson (5), the commonly used forecasting periods reported

to date in the literature of buying intentions and purchase probabilities have been 6, 12, and 24 months. If we accept that the usefulness of a forecast of consumer purchases is partially a function of its speed and accuracy, then, the 90-Day time horizon seems to be the most appropriate one. Clawson's field research findings supported the argument that the average purchase probabilities reported by consumers appear to be reasonably reliable predictors, of actual purchase rates, for a variety of products, over a three month period.

The Special Case of a New Product

Usually, forecast refers to future sales of an already existing product. In cases where a company is planning the introduction of a new product, sales forecast and generally the product's acceptance by the market, becomes of primary concern. Good management, before any major reallocation of resources for the production-distribution-promotion of a new product, should try to predict the market's reaction. The common approach to this problem is the so called market testing (selection of a representative but very small local market and experimentation). Another approach is the laboratory testing (instead of the market, potential consumers come to the company's labs for experimentation). In the latter approach is included the research study of Armstrong and Overton (1). In this study, lab testing was implemented using the probabilistic patronage approach. Participants, were informed about a new product (car services). Half of them were exposed to a very brief description of the product (one way communication, one page of multilithed text accompanied by a picture of a car), and the rest, to a comprehensive one (two way communication, visit on the lab, exhibition of 18 wall graphics, display of a full scale prototype, movie, explanations). Participants then were asked to fill a questionnaire indicating their purchase intentions for this product for various prices (from §60 to §150) and over various time periods (from less than 12 months to less than 4 years). Intentions were measured on a probabilistic scale supplemented by explanations. The finding of this research was that no significant difference was found between the two types of description. In this study, we don't have actual sales figures to compare them with the forecasted ones and assess the degree of forecast accuracy. What is of interest, is the applicability of the patronage probabilistic approach in a simulated case, where the quantity of information varies with no effect.

Determining Attitudes - Intentions

Having in mind the above experiment and the findings of this research, a closely related issue is finding the factors which influence purchase attitudes - intentions. These factors, also affect the estimate of probabilistic buying.

Myers (21), wrote that for every product, brand, pattern, style or other individual offering to the public there are at least two levels of evaluation. First, is the overall attitude towards the item, in terms of its suitability or desirability. The second level of evaluation is the attitude toward each of the item's component features or characteristics. If we want to identify the determinant attitudes, we can follow one of the following approaches : 1. Direct questioning. 2. Indirect questioning (including motivation research and covariate analysis). 3. Observation. 4. Experiment.

According to Myers, at the present time it is not apparently known which of these is the most effective for any particular problem or choice situation.

Myers, in his research used the indirect questioning (regression analysis) approach to show its power in uncovering determinant buying attitudes. The products used for his experiment were cat food and snack food. Both products, belonging to the consumers' products category, were new. Although he suggested that further study is necessary for finding sufficient answers, he concluded that buying intention is more closely related to the attitude towards at least one of the product's component features or characteristics, than to the overall attitude toward this product.

The managerial implication of the above study is of special importance, in cases where a new product is planned for introduction. Before any sales forecast based on purchase probabilities, another research should reveal the product's characteristics that appeal the most to the consumers, and affect their attitudes - intentions. Only in those cases, the purchases probability are more or less representative of the intentions, and might tend to approximate actual sales.

Pricing and Purchase Probabilties

The price of a product, presumably affects the purchase probability, espe-

cially in a competitive market environment. Barker (2) ,using the lottery model, tested the following hypothesis :

H1. There is no relationship between the probability to purchase and the accuracy in judging price.

This hypothesis was accepted and lead Barker to conclude that there is no significant difference between price estimates derived from the lottery and those obtained through direct questioning. A subject's evaluation of the price was independent of his own buying intentions, expressed as the probability of purchase within three months.

Speaking of price, Barker, through his article shifted the focus away from price as a measure of value toward product features as indicators of an acceptable price.

Brand Preference

In an attempt to compare and select the best sales forecast approach, Bass and Talarzyk (3), supported, after testing the hypothesis, that measures specific to the preference alternatives, rather than more general measures such as those of socioeconomic and personality characteristics, would lead to successful predictions. Accordingly, the brand preference is related to the attitude measurements based upon beliefs about and relative importance of product - specific attributes. The attitude model was shown to result in a greater percentage of correct brand preference predictions that other models tested.

Dynamic Proces

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Consumer behavior is the result of a dynamic and often complex decision-making process. In a recent article, Jacoby et. at. (14), argued that dynamic process can not be studied through static approaches. They wrote :

«... while consumer behavior is routinely conceptualized and discussed in terms of a decision process, research methodologies appropriate for investigating dynamic processes are not generally utilized. Instead, the-

oretically dynamic is sues are investigated via static, cross sectional methods, usually involving the solicitation of verbal reports, collected after, the fact».

According to the above, the discrepancy between measured-probabilistically projected bahavior and overt behavior should be attributed to the additional information acquisition during the time elapsed.

Jacoby et. at.supported that regarding depth, evidence from previous research employing traditional methodologies, suggest that consumers actually utilize very few items of information prior at arriving at a purchase decision. After testing a series of hypotheses, they found that consumers select only limited amounts of information from available package information arrays and tend to place substantial behavioral importance on price and particularly brand name information.

The findings of this research support the probabilistic patronage approach, agree with those of Howard and Sheth and partially disagree with those of Barker.

D. CONCLUSIONS

From a managerial perspective, sales forecasting based on purchase probabilities can be helpful if the following procedure - conditions have been met :

a. The sample, the panel of customers - potential customers, should be as-representative as possible.

b. The time horizon for the forecast, depending on the product, should be maximum one year.

c. Subjects, should be asked to assess their purchases intentions on a probabilistic scale, accompanied by the necessary explanation - classifications.

d. Subjects, should be asked on specific brands rather than product categories. In cases of retailing, instead of brand, subjects should be asked about the store.

e. Brands or stores, prices should be included in the questioning process, if possible.

In terms of the socioeconomic environment, sales forecast can be useful if.

f. There are no volatile economic conditions, present and projected in to the future.

g. There are no expectations of an inflationary schock.

h. Government intervention, in general, is more or less, stable.

i. In cases of close world economic interdependency, the international environment remains stable.

Since the above conditions (f-i) in our days cannot be considered as given, companies which forecast sales on a systematic basis :

j. Should not put all the eggs in one basket, and instead, should always prepare a stand - by emergency plan for extreme cases.

k. Should not leave their resources to be allocated solely according to the forecasted evolutions.

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