

Investigating Purchase Timing Behavior: A Case of Grocery Product SOAP

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Abstract:

In this article researcher try to understand the purchase timing behavior of consumer for fast moving consumer goods specially soap and check the loyalty towards it. Two parameters gender and age are considered to verify health and brand consciousness of consumers while purchasing soap. Researcher used observation method and questionnaire method for collecting primary data. In the observation method researcher collect the data of actual timing taken by the consumer for buying soap. Sample size covered for this survey was 311 customers. Retail outlets covered in the survey are Reliance fresh, Dorabjees, Big Bazaar, and D-mart. Researcher collect the actual time taken by consumer to buy soap and by using customer pyramid model, researcher divides these customers into four categories platinum, gold, iron and lead. Researcher also develops appropriate marketing strategy to improve the loyalty of customer. It was found out that customers are health conscious irrespective of gender while purchasing soap. It was also found out that there is significant association between age and brand consciousness while purchasing soap.

Keywords: purchase timing behavior, loyalty of customer, brand consciousness

Introduction:

Consumption of products often is separated temporally from the decision to buy those products. Hence, when making a purchase decision, consumers must predict their preferences at the time of consumption (Kahneman and Snell, in press; March 1978). The decision is complicated further if consumers want to avoid going to the store before each consumption occasion and decide to buy several items in a category for a number of occasions. For example, in one shopping trip a consumer might purchase a week's supply of yogurt. The research reported here examines the strategies consumers use when making multiple purchases in a product category for future consumption. The behavior of consumers who make multiple purchases in a product class for several consumption occasions is compared with that of consumers who purchase one item at a time before each consumption occasion. A comparison of these two purchase conditions suggests that making multiple purchases for several consumption occasions is a more difficult task for two main reasons. First, the mere fact that multiple decisions must be made simultaneously, rather than one decision at a time, tends to make this task more demanding, especially if no one alternative is perceived as far superior to all others.

Second, this task is likely to be more difficult because of the need to predict future preferences, which often change over time (McAlister 1982). Specifically, consumers' preferences when making purchases may be poor predictors of their preferences in a future consumption period because of possible changes in state of mind (Wright and Kriewall 1980) and tastes (Rozin and Schiller 1980). For example, at one time a consumer might prefer a strawberry flavoured yogurt and on the following day be in the mood for a raspberry yogurt. Similarly, for a certain period a consumer might have a strong preference for raspberry yogurt, and then have a change of taste in flavour. A question that naturally arises is: What decision strategies or heuristics do consumers use in making multiple purchases for future consumption when faced with uncertainty about future preferences and the need to make multiple decisions simultaneously? Another important component of the dynamics of a household's purchase behavior is the purchase-timing decision.

Accordingly, several models have been developed over the years to characterize the probability distribution underlying the inter purchase times (e.g., Chatfield and Goodhardt 1973; Dunn, Reader, and Wrigley 1983; Ehrenberg 1959; Helsen and Schmittlein 1989; Hemiter 1971; Jain and Vilcassim 1991; Jeuland, Bass, and Wright 1980; Lawrence 1980; Zufryden 1978; among others). A noteworthy aspect of these studies is that the brand choice decision is not investigated jointly with the purchase-timing decision. Likewise, most studies that have analyzed brand choice behavior (e.g., Guadagni and Little 1983; Krisnamurthi and Raj 1988; Zufryden 1986) have not modelled the timing of purchases. The exception is the study by Gupta (1988), in which brand choice and purchase timing are both considered. As argued by Hauser and Wisniewski (1982), purchase timing and brand choice are mutually dependent and both household-level decisions are influenced by managerial controls such as coupons, price, special displays, and feature advertisements, as well as by household-specific characteristics. Naufel J. Vilcassim (1991), "Investigating Household Purchase Timing Decisions: A Conditional Hazard Function Approach," *Marketing Science*, 10 (winter).

Regret and purchase timing. Much of the work that psychologists have done linking regret and satisfaction has examined how and when people spontaneously generate particular counterfactual comparisons (Kahneman and Varcy 1990). Consumer decisions, in contrast, often involve many alternatives that are provided by the purchase environment, any of which may provide information useful for evaluating one's purchase. This is especially true in the case of purchase-timing decisions. Suppose that you have been monitoring the price of airline fares waiting for a good time to buy tickets. You finally purchase when the tickets reach \$500. There are a variety of comparisons that you could make to help you evaluate your decision. You could recall that the tickets had been \$400 two weeks ago, \$450 three weeks ago, and so forth. In each of these cases, you may feel regret for not having purchased earlier. We will refer to these prices as pre purchase prices. We expect these comparisons to affect satisfaction. As pre purchase prices decrease, you should feel more regret and report being less satisfied with a given purchase. Purchase-timing decisions also offer consumers a second set of comparisons on which satisfaction may be based. Suppose that after you purchase your tickets, you continue to monitor prices, and you learn that prices drop to \$400 in the following week. In this case, you may regret not having waited to purchase your ticket. We will refer to these prices as post purchase prices. Like pre purchase prices, we expect post purchase prices to affect satisfaction: as post purchase prices decrease, you should feel more regret and be less satisfied with a given purchase. Although pre- and post purchase prices may both produce feelings of regret, the manner in which they influence satisfaction may be very different. Do pre purchase or post purchase prices have a greater effect on satisfaction? No research has explicitly addressed this question. However, there are a number of empirical results that may give us some guidance.

Perhaps the most relevant result is a study by Simonson (1992) that studied the relationship between anticipated regret and purchase timing. Simonson asked subjects to imagine that they had to purchase a wedding present in either July or August. Subjects in the regret condition were told that they would be shown comparison prices in the two months after making their choice. They were also asked to anticipate how they would feel if they (1) bought the product on sale in July and observed a lower price in August or (2) deferred until August and were forced to buy at higher prices than seen in July. Simonson found that people anticipated more regret in the second case, when a better price was passed over. Furthermore, subjects who anticipated learning August prices were significantly more likely to purchase in July than subjects who did not anticipate learning this information. Simonson argued that buying products on sale constitutes more of a subjective norm than deferring purchase, and therefore upward comparisons incurred through waiting produce greater regret (cf. Kahneman and Miller 1986). Simonson's (1992) results suggest that pre purchase prices may have a greater influence on regret and satisfaction than post purchase prices. However, his results may not generalize to more commonplace purchase-timing situations. First, Simonson's predictions were based on the normative nature of purchasing products on sale. Second, consumers may not be able to accurately anticipate the regret that they will feel or may be influenced by being prompted for their feelings of regret. Perhaps most important, subjects in Simonson's task were not given explicit counterfactual information.

Thus, they may have imagined counterfactual prices that were, in reality, extremely unlikely. A second literature that may yield insight is that of economic search. From an economic perspective, purchase timing decisions are simply a variant of an economic search task (Hey 1981, 1982; Simon 1955; Stigler 1961). A price is observed in the current period and compared to the expected distribution of prices. The consumer decides to purchase in the current period if the expected returns from additional search are smaller than the costs of waiting.

From this perspective, purchase-timing decisions are inherently forward looking; past prices are irrelevant unless they affect expectations (Jacobson and Obermiller 1990). Of course, search theory speaks only to purchase strategies that attempt to maximize expected value and does not incorporate hedonic information into the decision calculus (Inman et al. 1997). Furthermore, none of the traditional search experiments have provided subjects with post purchase information (Hey 1981, 1982; Stigler 1961). Nonetheless, if the results of search models generalize to satisfaction, we may find a greater effect of post purchase prices than pre purchase prices.

Similarly, Miller and Gunasegaram (1990) offer a psychological rationale for why post purchase prices might have a greater effect on regret. They find that later occurrences in a sequence of events evoke counterfactual comparisons more strongly. Their results suggest that post purchase prices, because they are the most recent price information received. Thus, regret and satisfaction may depend more on post purchase prices than on pre purchase prices. In summary, no research deals explicitly with how pre and post purchase prices affect purchase timing. Simonson's (1992) research, which deals with the effects of anticipated comparisons, suggests that pre purchase prices may have a greater effect. Economic search tasks, which do not incorporate hedonic values, suggest that the reverse may be true. However, if regret affects purchase timing, the effects of pre- and post purchase prices are both likely to depend on the control that the consumer has over the decision, as discussed in the following section.

Treatment of time in consumer behavior literature ranges from providing conceptual basis for considering activities related to time/use in consumption activities, to its incorporation in the models of consumer behavior. Some have viewed time as a resource while others have viewed time as a constraint. However, the major concerns appear to have been with allocation of clock time and with classification of activities.

While most of the consumer behavior models do not explicitly include time as a variable, there have been concerns with time dimensions. Of the available consumer behavior models, only two have explicitly treated time as a variable. The first to do that was the model provided by Howard and Sheth (1969) wherein time is treated as a constraint and their concept of time pressure in their model explicitly recognized that time pressure affected both purchasing behavior and consumption. The other model that has recognized the importance of time dimension in consumer behavior and therefore has incorporated it as part of their model is the one provided by Engel and Blackwell (1982). Their model views time as a constraint and treats time budget as parallel to money budget. Some other models of consumer behavior have implicitly incorporated some aspects of time, such as past, present and future (Nicosia model 1966) and decision and choice time in consumer contexts (Hansen 1972). Nicosia and Mayer (1976) have now come to advocate including time explicitly in consumer behavior models. Other "models" that have been presented in various consumer behavior text books do not explicitly or implicitly include time.

A number of consumer behavior researchers have focused their attention on time, with a view to understand its place and distinguish a number of conceptual issues. The earliest writer to focus on time was Wroe Alderson (1965). In his view, "behavior was activity occupying time," and therefore, allocation of total time available to the individual was of interest to him. With his concept of "hedonomics" focusing on the management of the capacity for pleasure, time was viewed by him as a basic scarcity when goods are abundant.

Schary's (1972) conceptual views follow closely that of the economists and, not surprisingly, he views time as a scarce resource, and limited and thus he posits that consumers will make their choices of goods and time such that they get highest possible satisfaction. Hawes (1978) has looked at different meanings of time, while Settle and his associates (1978) were concerned with time orientation of individuals. Graham (1981) has looked at three differing concepts of "perception of time", viz., (1) linear-separable; (2) circular-traditional; and (3) procedural-traditional. He pointed out that differing perceptions of time come into play in interpreting the time allocation by consumers.

According to Palaniswamy and Senthilvelkumar (2013), the penetration of soaps is about 90% in India and per capita consumption is 800 grams, which is less compared to that of many countries including US and China which are 6.5 kg and 4.5 kg respectively. However there are umpteen brands available in the bathing soaps category in Indian market and each has several variants under its stable. Lifebuoy, Lux and Liril of HUL, No.1 and Cinthol of Godrej and Santoor of Wipro are some of the major players in the Indian toilet soap market. The soaps are made available for the purchase by Indian consumers at about 5 million retail outlets. The ubiquitous new form of selling points in organized retailing exposes consumers to several of these attractive brands and attempts to exert a strong stimulus on consumers' choice. When soaps were introduced in India around the end of 19th century, all the brands were focusing on a straight promise of dirt removal and good cleaning.

The soap brands in India have evolved much over the years and presently brands are positioned on several new emotional platforms unheard of before. Most of the Indian brands make huge investments for their mass-media marketing communication initiatives. Since many brands appear to be similar in symbolism and claim to offer comparable benefits for users, the choice of one brand over another is a complex decision for consumers. Hence, a research to explore what consumers expect from a brand of soap assumes great significance.

Research Objective

Based on the above literature review, researcher developed the objectives which are as follow:

1. To understand the purchase timing behavior of consumer for fast moving consumer goods soap.
2. To know the loyalty based on purchase timing behavior of consumer.

Research Hypothesis

1. Customers are health conscious irrespective of gender while purchasing the products - soap.
2. Age of customer has significant impact on purchasing behavior.
3. There is significant association between gender and time taken to buy soaps.
4. There is significant association between age and brand consciousness while purchasing soap.

Research Methodology

For any research; deciding the sample size and sampling technique is an important part. There are various methods for deciding the sample size. For this study, the data collection was done by convenience sampling. Researcher used observation method and Questionnaire method for collecting primary data. In the observation method researcher collect the data of actual timing taken by the consumer for buying a product (soap) was collected. In questionnaire method the questions were framed keeping in mind the objectives of research. The questionnaire was filled by personal interview in the form of written responses of the questionnaire. Total sample sizes for the customers are 311. Retail outlets covered in the survey are Reliance fresh, Dorabjees, Big Bazaar, and D-mart. For the analysis of the data, researchers used basic techniques of Statistics such as mean, standard deviation, variance, etc; Hypothesis testing such Chi-square test and certain non parametric tests.

Analysis of data

Table 1: Purchase timing behavior of consumer for soap

Sr. No.	Time taken to buy a soap(seconds)	Number of respondent		Type of customer
		(In number)	(In %)	
1	05-10	91	29	Platinum
2	11-15	102	33	Gold
3	16-20	66	21	Iron
4	21 and above	52	17	Lead
Total		311	100	

From the above Table 1, researcher observed that 33% customer took 11-15 seconds to buy a soap followed by 29% customer who took 5-10 seconds, 21% customer took 16-20 seconds while 17% customer took 21 and above seconds to buy soap. Hence researcher divides this customer into four categories platinum, gold, iron and lead. The detail explanation is as follow, According to customer pyramid model, researcher divides these customers into four categories:

1. **Category I:** The Platinum, describes the company's most profitable customers, typically those who are heavy users of the product, not overly price sensitive, willing to invest in and try new offerings, and are committed to the firm.
2. **Category II:** The Gold differs from the Platinum Tier in that profitability levels are not as high, perhaps because the customers want price discounts that limit margins. They might not be as loyal to the firm even though they are heavy users in the product category--they might minimize risk by working with multiple vendors rather than just the focal company.
3. **Category III:** The Iron contains customers that provide the volume needed to utilize the firm's capacity but whose spending levels, loyalty, and profitability are not substantial enough for special treatment.

4. **Category IV:** The Lead consists of customers that are costing the company money. They demand more attention than they is due given their spending and profitability and they are sometimes problem customers complaining about the firm to others and tying up the firm's resources.

From the analysis it is observed that 29% customers are in the category of platinum, these customers are typically loyal with the brand while 33% customers are in the category of gold, and these customers are price conscious. Appropriate marketing strategy must be formulated to increase the loyalty of customer. It is necessary to turn less profitable customers into more profitable customers. Researcher suggests that based on the category of customer producer must use focused strategies to increase the sale. For platinum customer, the strategy such as increase brand impact by line extensions where the producer extended its product lines. In this case along with soap, producer extended its product lines into liquid hand wash, shoes, belts, jewellery, and even perfume.

For gold customer, producer should use the strategy such as reducing customers non monetary cost of doing business. In this case promote the soap and liquid soap simultaneously which will reduce the advertising cost. Another strategy would be develop frequent shopping programs, most retailers can benefits from it that encourage customers to spend more with the company in order to receive special benefit. Company can motivate customers to turn to them for all their category needs. Reducing cost of company would be another strategy which ultimately reduces cost and then price of product. Another strategy of special sales promotion scheme to be run so that gold category customer can attract towards it as they get some extra benefit from it. In this case appropriate sales promotion scheme for soap would be price off which give certain percentage of price discount.

Findings and hypothesis Testing

Hypothesis 1: Customers are health conscious irrespective of gender while purchasing the products - soap.

Out of 311 samples, 148 are males and out of which 103 is health conscious while 45 are not health conscious while purchasing the product. Whereas, out of 163 females, 110 are health conscious while 53 are not. So we can interpret that gender are more health conscious. From the chi-square test, Pearson Chi-Square p-value is 0.664. Since, level of significance i.e. $0.05 < p$ value i.e. 0.664 hence, we reject H_0 and accept H_1 . It means there is significant association between gender and health consciousness. Customers are health conscious irrespective of gender while purchasing the products - soap.

Hypothesis 2: Age of customer has significant impact on purchasing behavior.

Out of 311 samples 88 customers are in the age group of 31-40 followed by 86 customers in the age group of 21-30. From the chi-square test, Pearson Chi-Square p-value is 0.038. Since, level of significance i.e. $0.05 > p$ value i.e. 0.038 hence, we reject H_1 and accept H_0 . It means there is no significant association between age and time taken to buy soaps. Age of customer has not significant impact on purchasing behavior.

Hypothesis 3: There is significant association between gender and time taken to buy soaps.

Out of 311 samples, 151 are males and females are 160. Out of 151 males 106 purchase soap within 5-15 seconds. In the case of females, there is no vast difference in the timing of purchasing soap. From the chi-square test, Pearson Chi-Square p-value is 0.009. Since, level of significance i.e. $0.05 > p$ value i.e. 0.009 hence, we reject H_1 and accept H_0 . It means there is no significant association between gender and time taken to buy soaps.

Hypothesis 4: There is significant association between age and brand consciousness while purchasing soap.

It was observed that, out of 311 samples taken 208 customers are brand conscious. 115 /174 consumers are in the age group of 21-40 are brand conscious while 59/174 are in the age group of 21-40 are not brand conscious. From the chi-square test, Pearson Chi-Square p-value is 0.091. Since, level of significance i.e. $0.05 < p$ value i.e. 0.091 hence, we reject H_0 and accept H_1 . It means there is significant association between age and brand consciousness while purchasing soap.

Conclusions

Deciding when to make a purchase, people often compare their outcomes to those that would have occurred had they purchased earlier or later. Time is pervasive in a modern industrial lifestyle. We have not just discovered the concept of importance of time in human lives -- philosophers have been arguing about the existence of time independent of human beings as well as the concept of infinite time. Sociologists were concerned about the-concept of time, economists started viewing time as a resource in the 1960s and psychologists had been focusing their attention on the "perception of time" by individuals and time element was considered by experimental psychologists as one of the crucial variables.

The topic seems to have experienced a period of benign neglect and there is now a resurgence of interest in temporal dimensions, both in the concept of time and in the use of allocation of time. While there is a resurgence of interest in the study of time dimensions and particularly as it relates to consumption activities and marketing actions, still there is very little progress in empirical research in this area. In this paper, researcher objective is to understand the purchase timing behavior of consumer for fast moving consumer goods specially soap and check the loyalty towards it. From the analysis it was observed that 62% customers are in the category of platinum and gold, these customers are typically loyal with the brand and some of them were price conscious. It was observed that customers are health conscious irrespective of gender while purchasing the products – soap, age of customer has not significant impact on purchasing of soap. Finally consumers are brand conscious where age plays an important role while purchasing soap.

Bibliography

- Alderson, Wroe (1965), *Dynamic Marketing Behavior*, Homewood, IL: Richard D. Irwin, Inc.
- Chatfield, Christopher and Gerald J. Goodhardt (1973), "A Consumer Purchasing Model With Erlang Inter Purchase Times," *Journal of the American Statistical Association*, 68 (December), 828-35.
- Dunn, Richard, Steven Reader, and Neil Wrigley (1983), "An Investigation of the Assumptions of the NBD Model as Applied to Purchasing at Individual Stores," *Applied Statistics*, 32 (3), 249-59.
- Ehrenberg, Andrew S. C. (1959), "The Pattern of Consumer Purchases," *Applied Statistics*, 8 (March), 26-41.
- Engel, James F. and Roger D. Blackwell (1982), *Consumer Behavior*. New York: The Dryden Press.
- Graham, Robert J. (1981), "The Role of Perception of Time in Consumer Research," *The Journal of Consumer Research*, 7-4 (March), 335-342.
- Guadagni, Peter M. and John D. C. Little (1983), "A Logit Model of Brand Choice Calibrated on Scanner Data." *Marketing Science*, 2 (Summer), 203-38.
- Gupta, Sunil (1988), "Impact of Sales Promotions on When, What, and How Much to Buy," *Journal of Marketing Research*, 25 (August), 342-55.
- Hansen, Flemming (1972), *Consumer Choice Behavior*. New York: The Free Press.
- Hauser, John R. and Kenneth J. Wisniewski (1982), "Dynamic Analysis of Consumer Response to Marketing Strategies," *Management Science*. 28 (May), 455-86.
- Hawes, Douglass K. (1978), "The Role of Time in Models of Consumer Behavior," Research Paper No. 270, Institute for Policy Research, University of Wyoming (October).
- Helsen, Kristiaan and David C. Schmittlein (1989), "Analyzing Duration Times in Marketing Research," working paper, Wharton School, University of Pennsylvania.
- Hemiter, Jerome (1971), "A Probabilistic Market Model of purchase Timing and Brand Selection," *Management Science*, 18 (December), 102-13.
- Hey, John D. (1981), "Are Optimal Search Rules Reasonable? And Vice Versa? (And Does It Matter Anyway?)," *Journal of Economic Behavior and Organization*, 2 (March), 47-70.
- Howard, John A. and Jagdish N. Sheth (1969), *The Theory of Buyer Behavior*. New York: John Wiley.
- Inman, J. Jeffrey, James S. Dyer, and Jianmin Jia (1997), "A Generalized Utility Model of Disappointment and Regret Effects on Post-Choice Valuation," *Marketing Science*, 16 (Spring), 97-111.
- Jacobson, Robert and Carl Obermiller (1990), "The Formation of Expected Future Price: A Reference Price for Forward-Looking Consumers," *Journal of Consumer Research*, 16 (March), 420-432.
- Jain and Naufel J. Vilcassim (1991), "Investigating Household Purchase Timing Decisions: A Conditional Hazard Function Approach," *Marketing Science*, 10 (Winter).
- Jeuland, Frank M. Bass, and Gordon P. Wright (1980), "A Multibrand Stochastic Model Compounding Heterogeneous Erlang Timing and Multinomial Choice Processes," *Operations Research*, 28, 255-77.
- Kahneman and Carol A. Varey (1990), "Propensities and Counterfactuals: The Loser That Almost Won," *Journal of Personality and Social Psychology*, 59 (December), 1101-1110.
- Kahneman, Daniel and Dale T. Miller (1986), "Norm Theory: Comparing Reality to Its Alternatives," *Psychological Review*, 93 (April), 136-153.
- Kahneman, Daniel and Jackie Snell (in press), "Predicting Utility," to appear in *Insights in Decision Making*, Robin M. Hogarth, ed. Chicago: University of Chicago Press.
- Krishnamurthi, Lakshman and S. P. Raj (1988), "A Model of Brand Choice and Purchase Quantity Price Sensitivities," *Marketing Science*, 7 (Winter), 1-20.

- Lawrence, Raymond J. (1980), "The Lognormal Distribution of Buying Frequency Rates," *Journal of Marketing Research*, 17 (May), 212-20.
- McAlister, Leigh (1979), "Choosing Multiple Items From a Product Class," *Journal of Consumer Research*, 6 (December), 213-24.
- Miller, Dale T. and Saku Gunasegaram (1990), "Temporal Order and the Perceived Mutability of Events: Implications for Blame Assignment," *Journal of Personality and Social Psychology*, 59 (December), 1111-1118.
- Naufel J. Vilcassim (1991), "Investigating Household Purchase Timing Decisions: A Conditional Hazard Function Approach," *Marketing Science*, 10 (Winter).
- Nicosia, Francesco M. (1966), *Consumer Decision Processes*. Englewood Cliffs, NJ: Prentice-Hall.
- Nicosia, Francesco M. and Robert N. Mayer (1976), "Toward a Sociology of Consumption," *The Journal of Consumer Research*, 3-2 (June) 65-75.
- Palaniswamy and Senthilvelkumar (2013), "Is Soap more than a Bathing Product for Consumers?" *Journal of Marketing & Communication*, January - April 2013, Vol. 8 Issue 3, 1-14
- Rozin, and D. Schiller (1980), "The Nature and Acquisition of a Preference for Chili Pepper by Humans," *Motivation and Emotion*, 4, 77-101.
- Schary, Philip B. (1971), "Consumption and the Problem of Time," *Journal of Marketing*, 35 (April), 50-55.
- Settle, Robert B., Pamela L. Alreck and John W. Glasheen (1978), "Individual Time Orientation and Consumer Life Style," in *Advances in Consumer Research*, H. Keith Hunt, ed., Chicago: Association for Consumer Research, 5, 315-319.
- Simon, Herbert A. (1955), "A Behavioral Model of Rational Choice," *Quarterly Journal of Economics*, 64 (February), 99-118.
- Simonson, Itamar (1992), "The Influence of Anticipating Regret and Responsibility on Purchase Decisions," *Journal of Consumer Research*, 19 (June), 105-118.
- Stigler, George J. (1961), "The Economics of Information," *Journal of Political Economy*, 69 (June), 213-225.
- Wright, Peter L. and Mary Ann Kriewall (1980), "State-of-Mind Effects on the Accuracy With Which Utility Functions Predict Marketplace Choice," *Journal of Marketing Research*, 17 (August), 277-93.
- Zufryden (1986), "Multibrand Transition Probabilities as a Function of Explanatory Variables: Estimation by a Least-Squares-Based Approach," *Journal of Marketing Research*. 23 (May). 177-83.
- Zufryden, Fred S. (1978), "An Empirical Evaluation of a Composite Heterogeneous Model of Brand Choice and Purchase Timing Behavior," *Management Science*. 24 (March), 761-73.