

MEASURING PURCHASE DECISION TIME

Working Paper No. 68

by

Joseph W. Newman

Professor of Business Administration

and

Robert A. Westbrook

Faculty Assistant

FOR DISCUSSION PURPOSES ONLY

None of this material is to be  
quoted or reproduced without  
the express permission of the  
Bureau of Business Research

#### ABSTRACT

This paper questions the accuracy of measurements of purchase decision time which have appeared in marketing literature and discusses the measurement problem in the context of consumer durables. It introduces empirical findings to show that times based entirely on postpurchase data tend to be shorter for buyers with long decision times than times based on both in-process and postpurchase interviews with the same buyers. Sources of error are considered and suggestions are offered for future research.

#### BACKGROUND

This paper was prepared as part of a continuing research program on consumer purchase decision processes directed by Professor Newman.

## CONTENTS

Introduction	1
Comparing Two Measures	3
Sources of Error	5
Interpretation of Inexact Responses	5
Party of Major Influence	5
Elapsed Time between Purchase and Interview	6
In-Process vs. Postpurchase Mental Sets	7
Ambiguity of Questions	7
Discontinuity of Decision Process	8
Discussion and Conclusions	8

TABLES

1. Decision Times Reported by Purchasers of Major Consumer Durables in Three Different Studies	13
2. Decision Times Based on Two Different Measures	14

## Introduction

How accurate are the purchase decision times which have been reported in marketing studies? This article compares two measures of decision time for the same buyers of major consumer durables and reviews sources of error. The concept of decision time and related measurement problems are examined, and suggestions are offered for future research.

It should be noted that purchase decision time is a neglected subject in both the theoretical and empirical literature. Yet a grasp of the concept is important for understanding buyer behavior. It has implications for the comprehensive theoretical models of consumer behavior which have appeared in recent years [1, 3, 6] because it can affect a number of component variables. For example, it can influence the amount and character of information seeking and other prepurchase activities and can reflect differences among buyers and their motivations. Knowledge of decision time can be used by management in these ways: to estimate the number of potential buyers in the market at a given time; to plan content and frequency of sales communications so that they are appropriate for the time span prospects are in the market; and, when combined with the number of intended buyers, to forecast demand.

A limited amount of literature has dealt largely with consumer durables for which deliberation and, therefore, decision times long enough to measure, typically have been assumed. Three such studies based on postpurchase interviews have been published in the last seventeen years [2, 4, 5]. Their findings are summarized in Table 1.

In the 1968 study by Newman and Staelin purchase decision time referred to the interval between the first conscious thoughts of buying and the actual purchase. That is approximately the same concept used by Ferber in 1951 and Katona and Mueller in 1953, although they referred to it as the planning horizon or the length of the planning period. In essence, the respondent was asked to give the approximate date of the purchase and the length of time he had been thinking of buying. The questions employed in the 1968 study to obtain information about the length of the decision time were: "How long before actually buying the — did you people think or talk of buying it; was it a short time or many months or what?" The corresponding questions used in the 1953 study were similar: "Could you tell me how long you people were thinking or talking about buying a — before you actually bought it; was it several years, several months, or only a few weeks or days?" In 1951 Ferber asked: "How long had you been actively planning to make this purchase?"

Despite certain differences in the studies (see Table 1 footnotes), the findings have much in common. The percentages of buyers having decision times of three months or less are similar (54 percent for the 1951 study, 48 percent for the 1953 study, and 58 percent for appliances and 55 percent for cars in the 1968 study). The principal difference is that a greater percentage of buyers in 1968 reported decision times of two weeks or less. Assuming that the findings are accurate, a trend toward shorter decision times is indicated which, in turn, implies a more rapid turnover of active prospective purchasers. This conclusion has intuitive appeal because of: (1) the increase in the number of retail outlets offering a large variety of models and brands of appliances, frequently at "discount" prices; (2) increased familiarity with appliances, especially black and white television; and (3) the greater affluence of the population in 1968.

The accuracy of decision times based entirely on postpurchase data, however, is open to question in part because the times depend on reasonably accurate recall. The times in Table 1 cover purchases made 18 to 20 months prior to the

interviews. One could argue, therefore, that the longer decision times are underrepresented because of a failure by some respondents to fully recall how long before the purchase they first thought of buying. One also could argue, however, that short decision times also are underrepresented because of faulty recall. Buyers with short decision times may be more likely than those with longer times to forget purchases they made, say, a year or more ago; thus some purchases go undetected.

#### Comparing Two Measures

In an effort to ensure accuracy, two estimates of the starting time of the purchase decision process were obtained from the same group of buyers. One estimate was obtained when the buyers were engaged in the decision process but had not completed it. The other was obtained a year later in postpurchase interviews.

The 1968 data summarized in Table 1 came from households which had purchased one or more of the products of interest in the nineteen months prior to the personal interviews. The respondents were randomly selected adults in a probability sample of 1,300 households in the United States, excluding Alaska. Each interview focused on only one product--either a new car or, in the absence of a car purchase, the new appliance (color or black and white television set, refrigerator or freezer, washing machine, kitchen range or room air conditioner) bought most recently.

Besides the 652 purchasers, 219 households which had not bought one of the designated products in the specified time period but said they intended to do so in the next twelve months, were interviewed about their intended purchases. In September 1969, 179 of those 219 respondents were reinterviewed. Sixty-five had made their intended purchases, fifty-eight had postponed buying, and fifty-six had changed their minds about buying.

It is interesting to compare the following two measures of decision time for those respondents who stated in the second interview that they had made their intended purchase by September 1969:

Measure A. This is based entirely on postpurchase responses obtained in 1969 to these questions: "When did you buy it--in which month and year?" and "How long before buying a --- did you think or talk about buying it; was it a short time, or many months, or what?"

Measure B. This measure used the date of purchase obtained in 1969 and the response obtained in 1968 to this question: "How long ago is it that you first thought of buying a ---?"

Measure B produced substantially longer decision times than did Measure A (see Table 2). The difference was statistically significant at the .01 level. According to Measure B, only about 10 percent of the respondents had decision times under 5 months, whereas 44 percent had times ranging from 12.5 to 67.5 months. The comparable Measure A percentages for the same persons were 42 and 3.

Measure B produced an average decision time of 17.6 months, with a standard deviation of 19.2 months. Using Measure A the average decision time was 6.5 months, with a standard deviation of 5.6 months.

It should be noted that assumptions were necessary to quantify a number of the answers to the decision time questions. In regard to Measure A data, twenty-three of the responses in the 1969 interviews (40 percent) were given in quantitative terms (days, weeks, months, or years). Twenty-six responses (44 percent) consisted of approximate summary descriptions (a few weeks, several months, a long time, etc.). The latter cases required assumptions about equivalent numerical categories for which means were computed, i.e., a response of "a long time" was coded between 6 and 11 months. Seven of the respondents (12 percent) gave a time range such as "between 6 months and a year." Three (5 percent) gave minimum times such as "at least a year." These responses were coded as twelve months.



Forty-four of the respondents (75 percent) answered the 1968 decision time question used for Measure B in discrete terms which were taken at face value. Fifteen others, however, gave inexact responses which were converted to numerical equivalents by the same procedure used for Measure A. Eight of the fifteen gave approximate summary descriptions, five gave a time range, and two gave minimum estimates.

#### Sources of Error

Six potential sources of error are examined here to attempt to explain the wide difference between the Measure A and Measure B decision times.

#### Interpretation of inexact responses

Assignment of numerical equivalents was necessary in 60 percent of the cases for Measure A as opposed to 25 percent for Measure B. Common assumptions were employed, however, so resulting errors in the two measures should be offsetting to some extent. In addition, the magnitude of the errors could not be great enough to account for the marked discrepancy between the results of Measures A and B.

#### Party of major influence

The interviews were conducted with adults who may or may not have been the members of the household most concerned with the purchase. The discrepancy between the results of Measures A and B, therefore, might be explained by the uncertainty of the less concerned family members, which would be reflected in variability of responses in the two interviews. Analysis, however, showed that the disparity between the results of the two measures of decision time was not significantly related to whether the respondent said he or another household member was the party of major influence on the purchase decision ( $p < .69$ ).

Elapsed time between purchase and interview

One might expect that ability to recall when the decision process started would decrease as time passed between purchase and interview. If so, the difference between Measures A and Measure B results might be attributable to the variability of starting time estimates given in the two interviews when the elapsed time was large. Analysis showed, however, that the disparity between the results of Measures A and B was not significantly related to elapsed time ( $r = -.009$ ). If recall ability were impaired by the time of the second interview, the resulting errors in data from Measures A and B apparently were similar.

The fact that decision time for households which bought in August 1968 through February 1969 did not differ significantly from that for households which bought after February 1969 but prior to the September 1969 interviews provides further evidence supporting recall ability. This was true regardless of whether Measure A or Measure B was used.

Additional evidence on the effect of elapsed time came from the 1968 interviews of the 652 households which had bought new cars or major appliances in the preceding nineteen months. No significant difference was found between the decision times reported by those who bought in 1967 and those who bought in 1968. The same was true for the appliance buyers considered separately. Decision times tended to be somewhat longer, however, for the 1968 than for the 1967 buyers of new cars. While the latter difference was statistically significant ( $p < .04$ ), the magnitude was modest and certainly not great enough to account for the marked discrepancy between Measures A and B. Of the 59 reinterviewed buyers for whom Measure A data were available, only twenty-one bought cars, whereas thirty-eight bought appliances.

### In-process vs. postpurchase mental sets

A factor influencing recall of decision time (in particular, the point in time when the process began) may be the difference between the typical in-process and postpurchase mental sets of the buyer. After the consumer has made a purchase, memories of it may drop to a lesser degree of consciousness. If so, buyers may be unable to recover their original recollections of when the process started and may give later dates instead. This explanation is consistent with the observed disparity between data from Measures A and B.

### Ambiguity of questions

The questions used to determine when the decision process started may have been ambiguous enough to result in different interpretations and responses by the same person in the two interviews. It was not possible to determine whether respondent interpretations were consistent over time. Certain observations suggest that ambiguity may not have been as serious a problem as one might suspect. In the course of both pretesting and administering the questionnaire, few, if any, respondents asked what the question meant, and many gave quantitative answers when none was explicitly called for. These observations, however, did not provide reassuring evidence ruling out ambiguity.

This factor cannot be ignored as a potentially important source of error in time measurement and variability of response over time. In answering, some persons may have counted time from their first conscious thoughts of buying, whereas others may have started from later overt actions, such as an out-of-store or in-store information search. It is reasonable to expect the latter tendency to be more prevalent in a postpurchase interview than in an in-process interview.

### Discontinuity of decision process

Another possible explanation of the disparity between the results of Measures A and B is discontinuity of the purchase decision process. In some cases the process may be halted and restarted later. This could occur, for example, with recognition that the cost of the contemplated purchase exceeded funds that would be available for some time or from a decision to use the money available for something else first. A measure of decision time based on the assumption of a continuous decision process, of course, would overstate the actual decision time for cases in which that assumption was invalid. In such cases Measure B could be inappropriate.

When asked how long they thought about buying before doing so, persons with interrupted decision processes could respond in several ways: they could attempt to give the total time elapsing between their earliest thoughts and purchase; they could add up the various discrete time periods of the decision process; or they could confine their response to a subset (probably the most recent) of the total process. It cannot be determined from the data whether a decision process was interrupted or, if it was, which of the alternative responses was used. While we have no direct way of ascertaining whether Measure A is more appropriate than Measure B, we know that Measure B times exceeded Measure A times in 80 percent of the cases. This observation is consistent with the hypothesis that interrupted decision processes were well-represented by the reinterviewed buyers.

### Discussion and Conclusions

Now that Measures A and B have been compared and sources of error examined, what can be said about the accuracy of the published decision times for consumer durables represented in Table 1?

One conclusion is that the longer decision times in those distributions are underrepresented because buyers with long times tend to understate them

in postpurchase interviews. Reasons consistent with Measure A and B data include: (1) diminished ability to recall in the postpurchase as opposed to the in-process mental set; (2) a tendency in a postpurchase interview to reckon decision time from an overt act of information search as compared to a tendency in an in-process interview to start from earlier thoughts of buying; and (3) a tendency for buyers whose decision process is interrupted to report only a recent subset of the total decision period.

It is worth noting here that data from two other studies, which are of limited comparability, nevertheless lend some support to the above conclusion. Ferber found "planning horizons" for recent buyers to be shorter than for in-process prospective purchasers [ 2 ]. His time measure for buyers was comparable to Measure A. For prospective purchasers, he relied on their reports of decision time elapsed prior to the interviews plus the additional time they expected to elapse before buying. In a study by Pratt of buying intentions and purchases of thirty-five different household appliances, second interviews were completed in October 1961 with respondents who initially were interviewed a year earlier [ 7 ]. Their decision times were either similar to those produced by the studies represented in Table 1 or longer (Pratt favored the latter conclusion), depending on the assumptions used to assign starting times to more than half the buyers for whom no buying intentions were voiced in the first interview.

It is not possible from our data to specify appropriate adjustments which would make the previously published decision times more accurate. It would appear that the percentages of times of "a year or more" should be somewhat greater and that the category includes some decision times considerably longer than its label might suggest. Whether the percentages for the "4 to 12 months" category should be increased is not clear, although one might suspect that some upward adjustment might be in order for the longer time subdivisions of that category.

We can do no more than speculate about adjustments because our Measure B times are too long to be representative of all buyers of new cars and major household appliances. The principal reason is that the respondents who were reinterviewed constituted a sample biased toward longer decision times. The longer the decision time, the greater the chance an intended purchaser had of being detected by the 1968 probability sample of 1,300 households. The sample of reinterviewed buyers did not include households which had bought in the year prior to September 1969 but had had no conscious intention of doing so a year earlier. That many of them would have had short decision times is clearly indicated from earlier research. The bias toward longer times explains why the reinterviewed sample produced lower percentages of short decision times according to both Measures A and B than were reported by the earlier postpurchase surveys.

The bias in the sample also means that the data from reinterviews cannot address the question of accuracy of reports of short decision times (at least half the cases) of the earlier postpurchase studies. We can only note potential causes of error.

Earlier we mentioned that persons with long decision times might be more likely than those with short times to remember their purchases when interviewed some months later. If so, the short decision times and their related purchases have been underreported. The earlier studies have shown the number of very short decision times to be substantial, as can be seen in Table 1. In the 1951 study, Ferber found that a fourth of the buyers of major appliances reported no period of planning at all prior to purchase.

Reasons for overstatement of the incidence of short decision times include impaired recall over time of the true length and a tendency in postpurchase interviews to reckon time from an act of information search rather than from earlier thoughts of buying.

We have wondered whether the higher percentages for decision times of "2 weeks or less" reported by the 1968 study versus the 1951 and 1953 studies resulted in part from error. There is no apparent reason why error should have affected one of the studies more than another, however. Earlier we observed that the questions used in the studies were similar, especially those in 1953 and 1968, and Table 1 shows that the time distributions from the 1951 and 1953 studies were about the same.

Many intentions to buy are vague in the early stages, and their emergence is difficult to pinpoint in time. Even if a buyer were able to pinpoint his intentions in time, the question remains as to what the result really represents. It has been assumed that decision time as conventionally measured is a period in which the prospective buyer is interested in and influenced by product information. The conventional measures, however, presumably include a period of want formation and idle thoughts which should not be interpreted as part of the formation of the buying decision itself. To the extent that this is true, the time periods of serious buying intentions and active interest in searching for and receiving purchase information are shorter than those reported in the literature.

Decision times based on postpurchase data, however, at least provide rough estimates which have implications for marketing management and marketing theory. Precision is not necessary to serve certain practical purposes reasonably well. In addition, while absolute times based on postpurchase interviews may contain error, this does not necessarily impair their value as relative measures for dividing buyers into groups of widely different decision times for purposes of analysis. The latter was an important objective of the studies represented in Table 1.

The comparison of Measures A and B showed that two interviews (one in-process and one postpurchase) are better than one because they help define the range within which the truth lies. More accurate estimates could be obtained

by more frequent interviews of the same households. The more frequent the interviews, the greater the likelihood of detecting both buying intentions and purchases.

Decision time data would be more useful not only if they were more accurate, but also if they were more specific. Earlier we mentioned a need for knowing the number and character of decision processes which are discontinuous. Whether or not the process is continuous, there is a need for information which distinguishes between unlike portions of it. Decision time defined as the interval between the first conscious thoughts of buying and the purchase, of course, is of interest. Of greater interest, however, would be the identification and measurement of times for different degrees of consumer interest and activity. One could argue that the decision process for persons who buy a new car, say, every two years, is continuous because they are conscious of plans to buy on that schedule. While they may maintain some interest in new car information, this does not mean that they remain equally receptive to it over time or that their level of prepurchase information seeking is constant.

Future research might attempt to undertake the challenge of positioning in time such events as the emergence of the first conscious thoughts of buying, the formation of serious intentions to buy, the start of out-of-store information seeking, the start of store visits, and the purchase.



TABLE 1

Decision Times Reported by Purchasers of Major Consumer Durables in Three Different Studies\* (Percentage of Buyers)

Decision Time	1951	1953	1968	
	Study† Appliances	Study‡ Appliances	Study§ Appliances	Cars
Two weeks or less	30	26	51	45
Two weeks to three months	24	22	7	10
Four to twelve months	27	27	27	34
Year or more	18	21	13	10
Not sure/no answer	<u>1</u>	<u>4</u>	<u>2</u>	<u>1</u>
Total	100	100	100	100
Number of purchases	204	360	435	217

\*Because of differences among the studies in categories used for reporting findings, three allocations were made of reported percentages between time periods in an attempt to put the results on a reasonably comparable basis.

†The study by Ferber reported purchases of radios and electrical appliances costing more than \$25. The purchases were made in an 18-month period prior to January 1952 by 131 families in Decatur, Illinois.

‡The study by Katona and Mueller reported purchases of television sets, refrigerators, washing machines, and stoves by 360 families in a 20-month period ending in October 1953. The respondents were in a probability sample of 1,000 families living in the United States.

§The study by Newman and Staelin covered purchases of new cars by 217 households and purchases of new color television sets, black and white television sets, refrigerators-freezers, washing machines, kitchen stoves, and room air conditioners in a 19-month period prior to August 1968 by 435 households which did not buy a new car during the same period. The respondents were in a probability sample of 1,300 households in the United States, excluding Alaska.

TABLE 2

Decision Times Based on Two Different Measures\*

Decision Time	Measure A		Measure B	
	Number of Respondents	Percentage	Number of Respondents	Percentage
0 to 2.5 months	21	35.6	2	3.5
2.5 to 5 months	4	6.8	4	7.0
5 to 7.5 months	4	6.8	10	17.5
7.5 to 10 months	16	27.1	8	14.0
10 to 12.5 months	12	20.3	8	14.0
12.5 to 15 months	0	0.0	6	10.5
15 to 17.5 months	0	0.0	8	14.0
17.5 to 20 months	0	0.0	2	3.5
20 to 22.5 months	0	0.0	2	3.5
22.5 to 25 months	2	3.4	1	1.8
35 to 37.5 months	0	0.0	1	1.8
42.5 to 47.5 months	0	0.0	3	5.3
55 to 57.5 months	0	0.0	1	1.8
65 to 67.5 months	0	0.0	1	1.8
Totals	59	100.0	57	100.0

\*Complete usable responses were obtained from 59 of the 65 purchasing households for Measure A and 57 for Measure B.

## REFERENCES

1. Engel, James F.; Kollat, David T.; and Blackwell, Roger D. Consumer Behavior. New York: Holt, Rinehart and Winston, Inc., 1968, 34-54.
2. Ferber, Robert. "Factors Influencing Durable Goods Purchases." Consumer Behavior. Volume II. Edited by Lincoln H. Clark. New York: New York University Press, 1955, 75-112.
3. Howard, John A., and Sheth, Jagdish N. The Theory of Buyer Behavior. New York: John Wiley & Sons, Inc., 1969.
4. Katona, George, and Mueller, Eva. "A Study of Purchase Decisions." Consumer Behavior. Edited by Lincoln H. Clark. New York: New York University Press, 1954, 30-87.
5. Newman, Joseph W., and Staelin, Richard. "Multivariate Analysis of Differences in Buyer Decision Time." Journal of Marketing Research, VIII (May 1971), 192-98.
6. Nicosia, Francesco M. Consumer Decision Processes. Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1966.
7. Pratt, Robert W., Jr. "Time as a Dimension of the Decision Process for Household Appliances: Implications for Marketing Management." Unpublished Ph.D. dissertation, Graduate School of Business Administration, University of Michigan, 1970.