LIFE STYLE MEASURES AND SEGMENTATION IN RETAIL BANKING: AN EMPIRICAL EXAMINATION APPLIED TO AUTOMATED TELLERS

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PREFACE

Banking practices currently are undergoing revolutionary changes. Bankers now compete vigorously for retail market shares. Bankers are also attempting to integrate a new payment mechanism, electronic funds transfer systems, into their operations. To compete more effectively and to smooth bank customers' introduction and conversion to electronic funds transfer systems, many bankers are adopting marketing techniques. This study explores the use of life styles as a tool for segmentation and as a tool for improving the understanding of consumers' behavior related to the first consumer interface with electronic funds transfer systems, automated teller machines. Specifically, the purpose of the study is twofold: (1) to explore relationships among an individual's life style profile, demographic profile, his profitability to a bank as a customer, and his usage of automated teller machines; and (2) to examine the viability of using life styles as a base for segmenting the market for the retail banking service, automated teller machines. Data on banking behavior including automated teller usage came from bank records. Descriptive data, life style and demographic measures were gathered through personal interviews. The data were analyzed using chi-square tests, R- and Q-factor analyses, stepwise and linear discriminant analyses, multiple logit analysis and ANOVA procedures.

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CHAPTER I

INTRODUCTION

Background, Problem and Purpose

Over the past several years researchers have directed considerable attention concurrently toward the areas of segmentation and bank marketing. The rekindling of interest in segmentation results from recent developments in methodology and measurement instruments which have improved significantly the implementation of segmentation strategies. Bank marketing, being a relatively new area of interest, furnishes an interesting arena in which to explore methodologies and measurement instruments and provides an opportunity to document differences in customers' banking behavior. This dissertation integrates these interests by examining a theoretically more consistent approach to segmenting the market for a particular banking service, automated tellers. The dissertation also attempts to add to the body of knowledge concerning consumers' banking behavior by examining the relationships among an individual's life style profile, demographic profile, profitability to the bank as a customer, and his usage of automated tellers.

Segmentation has been defined in many ways. Most academicians and practitioners would agree with Philip Kotler's (1, p. 166) definition ". . . that segmentation is a process of subdividing a market into homogeneous subsets of customers, where any subset conceivably may be selected as a market target to be reached with a distinct marketing mix." Cravens

Hills and Woodruff (2) point out that at the most general level two approaches are available to accomplish this goal. The first approach is more consistent theoretically. It follows more closely the concept of segmentation. It first divides a market into groups by descriptive characteristics, and then measures behavioral differences in purchase or other response elasticities. The most popular approach by far, however, has been to work backwards. Initially, differences in purchase or some other behavioral characteristic are noted. Then these differences are correlated with descriptive characteristics such as demographics or psychological variables to produce, hopefully, meaningfully different profiles. Wells (3) feels that one problem which has detracted from the successful application of segmentation strategies stems from the inability to follow the more conceptually consistent pattern of first dividing a market into types based on descriptive variables and then measuring behavioral differences. One purpose of this study will be to attempt to assess the viability of this more pure approach to segmentation in retail bank markets.

Bankers today face revolutionary changes in their industry. A variety of circumstances feed the pressures for change. A tremendous increase in competition among bankers for retail market shares currently is taking place. Corporate treasurers have become increasingly more sophisticated at using their funds instead of leaving them idle in the bank. The banker then loses access to these funds. This trend, along with a desire to increase bank deposits and loans, has caused bankers to turn swiftly to the retail market. The rapid increase in competition has occurred for three reasons. The number of banks involved in this push is large and the new entrants in the struggle for retail market share tend

to be the larger banks (4). In response to this competition, bankers quickly are embracing marketing concepts and methods. Another pressure to change banking methods is the rapidly expanding volume of checks. Each check must be processed physically through the banking system. The growing volume of checks is already taxing the system, as evidenced by intolerably long clearing times. The volume of checks is predicted to become unmanageable in the very near term (4). A third force exerting pressure on the banking community to change comes from the federal government (5). As the volume of paper transactions swells, the amount and time of float accumulation increase. The resulting decrease in the response time to changes in monetary policy and an accompanying reduction in the precision with which the impact of a monetary change can be predicted is of obvious concern to government policy makers.

Both bankers and government policy makers are endorsing electronic funds transfer systems as the change in the payment system which would alleviate these pressures (5) (6) (7) (8). The first and currently most viable consumer interface with electronic funds transfer systems is automated teller machine equipment (4). For the reader not well versed in electronic funds transfer systems, automated teller machines, or the issues involved with them, an in-depth discussion is given in Chapter II.

A great deal of effort has been expended attempting to promote the usage of automated teller machines. Many difficult issues remain. One area of controversy of interest to marketing researchers and practitioners centers around the usefulness of demographic variables in defining the target market for automated tellers. Life style segmentation has been used successfully to segment the target markets for other products and services and for at least one related bank service, bank cards.

The concept of life styles is not a new one. It was first mentioned as an aid to understanding consumers by Paul Lazersfeld (9) in 1935. Life styles, like some other measurement instruments, were not terribly useful in segmentation until the development of the combination of computer data processing capabilities and new analytical techniques made possible by the calculating capacities of computers.

Life style analysis offers several advantages in segmentation research. The very nature of segmentation requires research results which are relevant both academically and practically. Academically, the holistic view of life style analysis makes it especially well suited to exploratory studies. The large number of scales and categories of information collected reduces the chance of missing significant relationships. Practically, the nature of the scales results in information more readily understood by managers, copywriters, and others who must use them.

Typically, bank marketers have used demographics in segmenting their markets and this has resulted in quite crude and less-than-satisfactory groupings. Life styles have been well documented as being useful in understanding buyer behavior and in segmenting markets. An excellent review was published recently by Wells (10).

Only three uses of life styles as vehicles for segmenting bank markets have been reported in the literature. Each of these studies involved bank cards. The first two, done by Mathews and Slocum (11) (12), found several interesting and useful relationships among social class, income and bank card usage. Persons in the lower social classes tended to use their cards more for installment credit while upper class members used bank cards mostly as a convenience and for impulse buying. While all

card holders had favorable attitudes toward credit, those using bank cards for installment credit were the heaviest users. The work of Mathews and Slocum (11) (12) is consistent with previous social class and sociological studies. They found, for example, that lower class consumers who used the cards for installment purposes also placed a low priority on saving for the future.

Plummer (13) extended the work of Mathews and Slocum by providing additional insights. His approach differed. Both users and non-users of bank cards were examined directly. Information concerning an individual's life style, demographics and usage was recorded. The study showed the greatest potential for use to be among the higher educated, middle-aged persons of higher than average incomes employed in occupations categorized as professional. The life style profile added enlightening dimensions. Users, as opposed to non-users, tended to be more contemporary in their thought, demonstrated a higher preference for risk and involved themselves more heavily in community services. Bank card users also tended to be more active, more urban, and have more interests outside the home. Of particular relevance were the findings that card users tended to place a higher value on convenience and achievement. Plummer (13) also found users to be more contemporary in their thinking and more likely to reject conservative or traditional solutions and explanations.

While these differences are interesting, the question of the viability of life styles as a segmentation base for retail banking services has not been addressed. Plummer (13) talks of using life styles as a segmentation base; however, he actually incorporated life style measures only as independent variables along with demographics. Usage is the segmentation base, not life styles.

The purpose of this dissertation is to test the pursuit of a more theoretically consistent approach for segmentation of the market for retail banking services. This task is accomplished by examining empirically the relationships among an individual's life style, demographics, utilization of automated teller equipment and his profitability to a bank as a customer.

Cravens, Hills and Woodruff (2), in their text, "Marketing Decision Making: Concepts and Strategy," point out that the underlying rationale upon which segmentation is based involves the concept that a market is comprised of different consumer types and each type buys differently from the other. From this they deduce that the most theoretically consistent method of segmenting a market would be first to divide a market into consumer types on the basis of a number of descriptive variables, and then to examine behavior similarities within segments and differences between segments. The more popular approach, as mentioned previously, has been the opposite, that of first defining segments by differences in a behavioral variable such as usage or brand loyalty. Then, attempts are made to match segments with consumer descriptive characteristics such as personality measures or demographics. This dissertation also provides the opportunity to accomplish several other related objectives. They include:

1. comparing two approaches for segmenting the market for retail bank services, demographics and life styles;

2. evaluating whether segments based on life style measures are useful in predicting usage of automated teller equipment;

3. evaluating the marginal value of adding life style measures to demographic measures as a means of predicting the likelihood of an individual using an automated teller machine;

4. determining if users of automated teller machines differ from non-users in profitability to the bank as customers;

5. determining if differences in life style, demographics, or profitability exist between users and non-users of automated tellers, and the nature of these differences; and

6. determining if these differences appear to be consistent across the mix of retail bank services.

The major purpose and the first five objectives are empirically tested. The sixth objective is not tested directly, but evaluated through a comparison of the results to the results of Plummer's study which utilized the same instrument on a different retail bank service.

Overview of the Study

This study involves the measurement of two groups' life style profiles, demographic profiles, their profitability to the bank as customers, and analysis of several relationships within and between the groups. The two groups consisted of users and non-users of automated teller machines. An individual was classed as a user if he utilized an automated teller at least once a month over a three-month period. The life style profile was measured using the 300-item library developed by Wells (14). This instrument has been used widely and judged to be a valid reliable measure of life style.

The data for this study come from two sources: (1) the bank's data base, and (2) personal interviews. The bank's data base constituted the sampling frame and provided names and addresses, automated teller machine usage records, and account balances. Data collection involved the following procedure. First, the bank's retail customer list was divided into those who used automated teller machines an average of one or more

times each month and those who did not. Non-users were then selected in a purely random fashion. Users were selected on a systematic basis. Many more persons used automated tellers a small number of times each month. The distribution of number of users, if scaled from light to heavy, would be highly skewed toward the light user end. Since the objectives of the study hinge on examining differences in characteristics of automated teller users and non-users, it is desirable to insure adequate representation of those most indicative of automated teller machine users, those persons who use them most frequently. The users were divided into three groups: light users (those using an automated teller once or twice a month), moderate users (those using an automated teller three, four or five times a month), and heavy users (those using an automated teller six or more times each month). Then, ten light, twenty moderate, and twenty heavy users were selected randomly from each group. The sampling requirements for this study are somewhat unusual in that the proportion of automated teller usage in the sample need not be representative of the proportion of automated teller usage in the population. The important requirement, analytically, was adequate representation of "good" examples from each group.

Personal interviews were conducted to collect life style and demographic information. This information was matched to the demand, time, and loan account balances from the bank's records. The individuals' names were then removed from the data files to insure protection of their privacy. The sample size was determined based on resources, analytical requirements and anticipated response. The sample size is small but adequate for analysis by the statistical procedures incorporated in the study. The statistical measures employed to examine data included:

Chi-square, R- and Q-factor analyses, stepwise and multiple discriminant analyses, logit analysis, and ANOVA procedures.

Limitations

This dissertation is subject to the normal limitations of limited resources, uniqueness of a geographic area, and breadth of the investigation. Limited resources necessitated a smaller than desired sample which was not selected in a purely random fashion. This limitation does not prevent testing the hypothesis put forth in the dissertation. In addition, respondents were selected from a frame limited in geographic area and limited to the customers of one North Carolina bank. This frame, though technically weak, does not pose a serious problem to testing the hypothesis. Because of the geographic bounds, the validity of the evidence, however, can be statistically applied only to North Carolina. The reasons that using one bank's customer base on the sampling frame does not pose serious problems to the validity of the study are discussed in Chapter III. Finally, the measurements incorporated in this dissertation are static. They occurred at one point in time. The respondents' descriptive and behavioral characteristics can, and probably will, change over time.

These limits do not pose serious threats to the validity of the study. It is the purpose of this study to explore the feasibility of several approaches to segmenting retail bank markets and to uncover and describe additional dimensions for understanding the consumption decisions of bank customers.

Plan of Action

Chapter II reviews the literature to place the study within the framework of current marketing thought. Five areas are covered. They include: (1) segmentation work incorporating life styles, (2) measurement of life styles, (3) uses of life styles in marketing other than segmentation, (4) banking studies using life styles, and (5) a perspective on the current status of electronic funds transfer systems. Chapter III sets out the proposed hypotheses and the methodology to test them. Chapter IV presents the results of the analysis, and Chapter V contains the summary, conclusion and recommendations for future research.

CHAPTER II

LIFE STYLES IN MARKETING RESEARCH, BANKING STUDIES INCORPORATING LIFE STYLES, AND AN ELECTRONIC FUNDS TRANSFER SYSTEM STATUS REPORT

This chapter positions the work contained in the study within the framework of current marketing thought. Five areas will be reviewed, (1) segmentation work incorporating life styles, (2) the measurement of life styles, (3) the other uses to which life styles have been put, (4) banking studies using life styles, and (5) a perspective on the current status of electronic funds transfer systems. This review will not be comprehensive, but will be limited to those dimensions critical to the study. The section on life style segmentation begins with a definition. Then an overview of the uses of life styles in segmentation work is presented. The intent is not to enumerate each marketing application of life style as a base in segmentation work, but to exemplify the types of applications to which life styles have been employed and to point out the relative strengths and weaknesses of the technique. The second section discusses the variety of ways life styles have been measured. The third section reviews other applications of life styles to marketing data, and the fourth section reviews the published literature documenting uses of life style in bank marketing applications. The final section provides a perspective of the current status of electronic funds transfer systems.

First, the status of current payment mechanisms are examined noting the strengths and weaknesses of each. This puts into perspective the needs and opportunities for an alternative payment mechanism like electronic funds systems. Next, the directions these systems are most likely to take are analyzed by looking at each of the groups favoring the various options and at the reasons why each group wants implementation of such systems. Then the major issues and concerns posed by electronic funds transfer implementation and a short-term timetable for service introduction are presented for those not current on the controversy.

Life Styles in Segmentation Research

This section overviews the uses of life styles as a segmentation base. First, the basic concept of life styles is illustrated. Then, some examples of the various ways life styles have aided segmentation work are examined. Specifically, the work reported is grouped into three categories: first, studies in which life styles have increased the understanding of existing segments; second, studies in which life styles have contributed new dimensions on which to segment; and third, studies in which life styles were used to create new segments based on product- or brand-related interests, needs, opinions and sometimes, values. Finally, a brief discussion is presented concerning the controversy over the use of life styles in a general, as opposed to a product- or brand-specific orientation.

Life Styles Defined

The concept of life styles as a measure of behavior has been recognized for over twenty years. Life style was first used in 1955 by Mayer,

a sociologist, and later by another sociologist, Kahl, as a criterion for social class stratification. The concept, however, has received much greater reception in the marketing literature. Lazer, in 1963, identified life style as a major behavioral concept for understanding, explaining and predicting consumer and business behavior. He went on to say, "It is a more generalized concept than existing concepts of consumer behavior . . . " (15, p. 132). Life style seems to subsume the various descriptive concepts used in marketing unifying them into a more meaningful whole. Lazer, in fact, had high hopes of life style providing a point of convergence where the various theories explaining behavior both within marketing and in other disciplines would come together. While life styles have not provided this unifying base for homologating the various theories of behavior, its principal benefit does lie in its more holestic multifaceted description of how individuals spend their time and money. Moore (16, p. 103), in 1964, for example, defined the life style concept as a "patterned way of life into which family members fit various products, events or resources." Another interesting definition of life styles was posed by Levy (17, p. 145), who defined the concept as referring to a general symbol which expresses "a certain central emphasis in motivation and action." He went on to explain that various accoutrements and activities serve as subsymbols that are used to play out a general symbolic meaning and to embody it.

These definitions are more distinct than they appear at first reading. Those by Lazer and Moore take a different approach from Levy's. The distinction identifies the two major ways in which an individual's life style can be described or measured. Levy's method was to measure a person's life style by the combined package of the products he consumes.

The other major approach has been to measure a person's activities, interests, opinions and sometimes, his values. This second approach has been, by far, the most popular in the marketing literature and with practitioners. It is gaining wide acceptance as a supplement to traditional demographic and socioeconomic variables. Next, the three kinds of contributions life styles have made to market segmentation are discussed.

Life Styles as a Means of Better Understanding Existing Market Segments

One benefit life styles bring to segmentation work is the ability to increase our understanding of existing market segments. A problem market researchers have in employing demographic, socioeconomic, or even product or brand usage as descriptor variables in segmentation, is the determination of the level at which the segments are split. Often the segmentation level appears quite discriminating when, in fact, it aggregates significantly different subgroups into the same segment. Studies by Good and Suchsland (18) and by Twedt (19) illustrate this point quite well. Good and Suchsland first used price and retail outlet patronage to attempt to segment furniture buyers. They then used life style measures to complement the analysis and found that even though the price paid and outlet patronized were the same, the woman purchasing an Early American style was quite different from one purchasing contemporary glass and chrome. This is not a surprising result, but one which was masked using outlet patronage and price as the discriminating variables. When usage rates comprise the descriptor variables, the advantages are often even more vivid. One very popular segmentation base, product or

brand usage, consists of looking for products which demonstrate a "heavy half" phenomenon across various product categories. Twedt found, for example, that 29 percent of the population consumes 91 percent of all lemon-lime soda and that 23 percent of the population consumes 88 percent of all beer. Using beer as an illustration, researchers later found that heavy consumers of beer tend to be quite distinct. Johnson (20) discovered a number of dimensions upon which heavy users of beer differ. One segment felt all beer was pretty much the same and therefore opted for low-priced brands, while another group of heavy users tended to be quite prestige conscious and preferred the more expensive brands. A third and even less obvious example using life styles to point out unseen differences in existing segments is provided by Tigert (21), who showed that despite the similar basic content of Newsweek and Time magazines, average readers proved to be quite different in life style. For example, those who read only Newsweek felt they valued security more than money in a job, tended to worry more about both government and union power, read the Bible more often, felt Communism was among the greatest perils facing the United States today, and perceived themselves as being somewhat more old-fashioned in their tastes and habits, felt America would be a better place if people would work harder and complain less, and tended to be more unhappy with their current situation in life. Time readers tended to take more pride in their jobs, felt more strongly that they had a lot of personal ability, were more optimistic about the future and tended to be more interested in travelling abroad. Newsweek readers, on the other hand, tended to worry more about their health and felt more strongly that their family's health was not what it should be, tended to be more concerned with the possibility of contracting cancer, felt more

strongly that everyone should use a mouthwash and felt more strongly about the importance of washing one's hands before a meal. Additionally, they complained more often about the quality of merchandise, saw themselves as being more price conscious, used credit less, tended to be less optimistic about the future, liked beer, camping, hunting, working out of doors more than Time-only readers. Finally, the Newsweek-only readers tended to spend more time with their wives and children. Thus, with life styles, less chance exists of aggregating over significantly different segments.

These results also provide a much more meaningful and fuller description of the existing segments. By helping the researcher perceive more about an individual who is typical of a segment, one gets better insight into why an individual behaves as he does rather than just a description of what he does. These kinds of information provide a more detailed indication of how each segment can be best served. For example, the Tigert (21) study suggested Newsweek would be superior to Time for advertisements concerning beer, guns, camping equipment and mouthwash. Tigert (21) also suggested Newsweek copy should be more traditional, objective and factual, whereas Time copy might benefit by being more personal, optimistic, cheerful and less traditional.

Life style analysis, because of its richness in the number of dimensions, frequently has been used to provide dimensions for multidimensional scaling preference maps, and in addition, to provide dimensions for mapping the multitude of measures, thereby making the job of discerning why a segment behaves as it does much easier. This benefit occurs principally because many of the life style dimensions assess attitudes, needs and values at a somewhat higher level of abstraction than the values placed

on attributes of brands used with a Rokeach value survey incorporated into a Fishbein attitude model. With knowledge of the more general framework of dispositions, it usually becomes much easier to discern why an individual or segment places a high or low value on a specific product or brand benefit.

Life Styles as a Contribution of New Segmentation Dimensions

The second way life styles have aided segmentation research is by contributing new dimensions on which individuals might be segmented. Wilson (22) first reported the now frequently used scales measuring venturesomeness at the 1966 American Marketing Association meetings from a study comparing homemaker living patterns, product consumption and magazine readership. In the same study, he also identified such life style concepts as "the happy housekeeper," "the special shopper," "the fashion conscious shopper," "the weight watcher," and others. Scales that commonly are used to measure risk-taking propensity, generalized self confidence, value orientations, dogmatism and innovativeness in product adoption have also come out of life style work (22).

Life Styles as a Means of Discerning New Segments

The third way life style work has benefited segmentation research stems from its ability to discern viable new segments. If, for example, segmentation is based solely on preferences for existing products, opportunities for successful segmentation will probably remain undiscovered. Many times life style analysis of the users of a particular product has illustrated differences among them. That is, the second product offering

has succeeded in attracting users with somewhat different combinations of interests, needs and values. In these instances and in situations where a group or several groups of users really prefer a different set of product attributes, the opportunity exists to create new brands or new products that better match their wants, needs and values.

Essentially, two basic approaches have been used to create new segments with life style scales. One way has been to develop segments measured on scales which are related to specific products. The other way is to derive segments based on scales measuring general life style attributes. Some examples of each will be presented, followed by a discussion of the implications of both approaches.

The philosophy of the generalized approach is represented in the following statement by Wells and Tigert (23).

> One way to design a study that includes questions of this type [life style] is to develop hypotheses and prepare specific questions to test these ideas . . . The alternative is to cast a wider net--to ask about a wide range of activities, interests and opinions that may have no obvious relationship to the product being studied. This approach has the advantage of not focusing on the obvious and not precluding the unexpected. It is valuable because unexpected relationships often lead to new ideas (p. 148).

A good example of one of the earliest published generalized approaches is a study by Tigert, Lathrope and Bleeg (24), who attempted to use life styles to determine heavy users of Kentucky Fried Chicken. The authors correlated life style, product usage and demographic variables against purchases of Kentucky Fried Chicken. Those purchasing carry-out fried chicken from a Kentucky Fried Chicken outlet at least once a month were classed as "heavy users." The study showed a number of differences between "heavy" and "non-" users. Some of the more pertinent examples of these differences are discussed next. In terms of demographics,

heavy users were more likely to be employed full time, to be younger, to have a family, to be significantly higher than average in terms of family income, but not to be up to scale in terms of either education or occupational status. In terms of other products used, heavy users of Kentucky Fried Chicken also consumed significant amounts of candy, chewing gum, soft drinks and various cosmetics and toiletries. They tended to purchase more convenience food items. A greater proportion of the food budget expenditures was for television dinners, frozen fruit, frozen side and main dishes, canned spaghetti and toaster pastries, while less-than-average amounts were spent on such common cooking items as shortening and sugar. The life style profile determined heavy users to have a greater zest for life. They indicated a higher degree of optimism concerning their financial and personal futures. Heavy users also tended to score higher on fashion consciousness, concern over personal appearance, credit use, interest in active rather than passive pursuits, personal influence over friends, willingness to assume risks and extroversion. Although they were above average in income, they did not indicate an above average interest in upper-class social or cultural pursuits.

Based on the combination of demographic, usage and life style profiles, Tigert, Lathrope and Bleeg (24) made the following assumptions about heavy users. They (1) accept charge cards (based on their life style preference for credit usage); (2) maintain an informal atmosphere (life style profile indicated interest in casual dress for routine mid-week dining experiences); (3) tie in promotional activities with bowling alleys, beauty parlors, theaters, and so forth (life style profile indicated these as derived activities); (4) don't stress cents-off promotion since heavy users do not appear overly price conscious (combination of

usage and life style profile); (5) consider home delivery (life style indicated an overriding concern for convenience and preference for time-saving services). Each of the strategic assumptions depended to a significant extent on the results of the life style component of the study. This example clearly points out the strategic value of life style as a marketing management tool.

Other published examples of the generalized approach include studies by Bernay; Tigert; Wells; Wells, Banks and Tigert; Wells and Gubar; and Wells and Tigert (25) (26) (27) (28) (29) (30). Nelson's (31) study will be mentioned as it utilized a unique means of measuring life style. He provided twenty statements of positive connotation and twenty of negative connotation. Statements such as "honest," "straight-forward and up-front" represent positive items, while "some tend to be overly sensitive" or "tend to be easily hurt" are illustrative of negative statements. Subjects were asked to choose the five best descriptors and the five least appropriate descriptors. These were set aside and the procedure repeated until all forty cards had been processed into best and worst categories for both the ideal and present self. Nelson then defined a deficient need fulfillment as a situation where an individual's present self-image did not measure up to his desired self-image. He hypothesized that individuals would seek products, i.e., behave in ways, which would decrease these differences. Additional life style measures and usage data were collected. Through factor analysis of the life style measures he delineated several types of individuals. A comparison of the product usage and need analysis described above by each of the life style groups showed significant correlations. Thus, life styles were shown to be an accurate indication of behavior and psychological makeup.

The other major approach to creating new market segments with life style variables has a narrower scope. As mentioned earlier, these classifications are somewhat arbitrary; however, this distinction has generated a good deal of controversy in the literature. In the specific approach, the research instrument is structured such that the measures are made of the consumer's perception of the benefits associated with a given product class or specific brands within a product class.

Studies using product-specific measures of life style as the principal discriminating variables include those by Haley; Heller; Bass; Pessemier and Tigert; Wells; and Yanklovich (32) (33) (34) (35) (36) (37). Haley's (32) and Heller's (33) work are compared to illustrate that although the studies are categorized into two groups, some are much more product-specific than others. The studies form a continuum from specific to general and the distinction is somewhat arbitrary. Haley's (32) approach is quite specific. He feels that the desire for benefits provides the primary reasons for the existence of true market segments. Thus, benefits sought by the consumer provide the best predictor of behavior. In his Journal of Marketing article entitled "Benefit Segmentation: A Decision-Oriented Research Tool," the results of a life style analysis of the toothpaste market is presented. Table 1 presents his summary of how such an analysis could be applied. Haley (32) states that in his experience, the segments delineated have, to a large extent, been unique to the product categories being analyzed. For example, a price buyer of wrist watches delineated in Yanklovich's (37) benefit segmentation study may not be price conscious with respect to other purchases. Thus, Haley (32) feels it is too difficult to generalize about the types of segments discovered in a benefit segmentation study

TABLE I

TOOTHPASTE MARKET SEGMENT DESCRIPTION

Segment Name	The Sensory Segment	The Sociables	The Worriers	The Independent Segment
Principal Benefit Sought:	Flavor, product appearance	Brightness of teeth	Decay prevention	Price
Demographic Strengths:	Children	Teens, young people	Large families	Men
Special Behavioral Characteristics:	Users of Spearmint-flavored toothpaste	Smokers	Heavy users	Heavy users
Brands Disproportionately Favored:	Colgate, Stripe	Macleans, Plus White, Ultra Brite	Crest	Brands on sale
Personality Characteristics:	High self-involvement	High sociability	High hypochondria	High autonomy
Life-Style Characteristics:	Hedonistic	Active	Conservative	Value-oriented

Source: Russell O. Haley, "Benefit Segmentation: A Decision-Oriented Research Tool," Journal of Marketing, Volume 32 (July 1968).

using life styles as the descriptor variables. Heller's (33) work, on the other hand, is somewhat more general. His approach is to develop a "sphere of attitudes" to describe the consumer in a particular situation. Figure 1 presents an illustration suggested by Heller defining the "sphere of attitudes" relevant for a study of automobiles.

Heller's (33) conception is to base segmentation on the consumer's attitudes toward a product. He phrased it this way:

> A person's attitudes toward a product can be related to whether he will buy that product. Notice I say related. For an attitude can be the cause of purchase or it can be the effect of a purchase (p. 46).

To determine the "sphere of attitudes," he suggested a combination of depth, group interviews and expert opinion to identify the set of attitudes relevant to the purchase decision under consideration. Each group was asked how it thought people viewed the product class and what people liked and disliked about specific product attributes. In addition, life styles and behavioral information were collected to measure how people behaved in relation to the product class.

This concludes the overview of studies using generalized or specific life style approaches to create new segments. Most researchers appear to favor the specific approach as being more applicable to marketing problems. For instance, Young (38), at the 1968 Fall American Marketing Association Conference said a marketer should only be concerned with those aspects of life style and personality which are relevant to the way consumers think relative to this product category. Any classification of consumers which attempts to generalize about their personalities without considering the role in which the consumer uses the product or the importance of the product in his life is likely to be irrelevant and even misleading in

I. What Consumers Are Like that Relate to Using the Product Class

A - Attitudes Toward Travel
- Long trips
- Shopping, driving
- Commuting use of automobile
- Use of automobile by other family members
- Etc.

B - Social Activities and Mobility
- Type of social activities enjoyed
- Use of automobile socially
- Role of auto as social tool
- Etc.

C - Attitudes Toward Highway Safety
- Seat belts
- Safety measures
- Care and repair of car and safety accessories
- Attitudes toward speeding and law enforcement
- Etc.

D - Liberalism-Conservatism
- Liking for new things
- Trying of new products
- Attachment to old things
- Etc.

E - Self Image and Description
- Beliefs about self
- Important descriptions of behavior and habits
- Etc.

F - Attitudes Toward Automobile Buying and Maintenance
- Beliefs about dealers
- Attitudes toward repairs and maintenance
- Amount of comparison done before purchase
- Etc.

G - Driving Habits and Patterns
- Attitudes toward shifting
- Getting away from lights and stop signs
- Specific patterns
- Etc.

II. What Consumers Are Interested in Getting from Automobiles

A - Styling
- Specific likes and dislikes covering styling areas

B - Size
- Requirements for space in car and outer dimensions of car

C - Economy
- Attitudes toward initial price, fuel, economy, and other automotive costs

D - Driving Characteristics
- Attitudes toward type of ride, i.e., feel of road, smoothness, etc.

Figure 1. Examples of the Areas Covered in a Sphere of Attitudes Developed for Automobiles

E - Special Features
- Attitude toward extras, radios, stereo, power equipment, luxury extras, etc.

F - Prestige
- Role of "secondary meanings" of automobile

Source: Harry E. Heller, "Defining Target Markets by Their Attitude Profiles," Attitude Research on the Rocks, Lee Alder and Irving Crespi (eds.), Chicago: American Marketing Association (1970).

Figure 1. (Continued).

many product situations (38). Hustard and Pessemier (39) conclude that specific activity and attitude variables often turn out to be more useful (than generalized variables) when brands are differentiated on physical and physiological grounds and a brand level competitive strategy is the dominant consideration.

Proponents of the generalized school of thought like Plummer (40), Wind and Green (41) point to the disadvantages of the specific approach. For one, they point out that the product-specific approach can often degenerate into simple redundancy. Heavy beer drinkers turn out to be those who like the taste of beer. Heavy users of dog food turn out to be those persons owning dogs. Even when this does not occur, the analysis often simply shows what the product can and cannot do. People buy fluoride toothpaste because it prevents cavities. Therefore, they want cavity prevention where another group wants white teeth since they are more social and therefore place a higher priority on white teeth and buy toothpaste which promises to whiten the teeth. Another and more real disadvantage of the product-specific approach is its lack of generalizability. Each product requires a separate study which is expensive.

The proponents of the general approach point out that these methods overcome many of the shortcomings in the specific approach. Replications using a standard set of measures allow the reliability to be verified. Where time is a consideration, a set of measures can be put together and information gathered much more quickly using a set of prepared measures rather than having to prepare an appropriate list each time. The generalized approach also allows changes to be monitored over time by using the same items in successive measurements of the population of interest. It is less expensive to use the same measures rather than to create and refine new ones each time. And finally, measures used in the generalized approach which because of their nature tend to be more people- rather than product-oriented, may be better descriptors of the group's true overall life style. Thus, generalized measures may be more helpful in discerning new products or services for that unique segment. Many of these disadvantages are not important to some users; the specificity of the specialized approach is not as important to producers as it would be to an advertising agency with many different clients. Wells recommends an approach which derives the benefits of both approaches while minimizing the disadvantages (42). He suggests a combination of sorts. First, general data are collected on a broad base of customers. In addition, usage and demographic information are gathered. This information is then stored. In subsequent studies a much smaller, more specific instrument is used in conjunction with usage information on specific products. A bank of information is built up in which key measures can be compared over time. This allows reliability to be checked and costs can be held down. The approach is not without fault; however, on balance, it seems to offer a solution for firms which do a large number of studies.

The Measurement of Life Styles

Several means of measuring life styles have been reported in the literature. By far the most widely used is the AIO (Attitudes, Interests, Opinions) format developed at the University of Chicago by Tigert and Wells. They developed sets of questions measuring a wide range of activities, interests and opinions. Following are the major categories and examples of each from Wells' original AIO Item Library (30, pp. 25-35).

FINANCES

Prices will probably be a lot higher next year.

If I had more money, I would spend more on food.

Grocery shopping for my family means sticking to a strict budget.

CREDIT

I buy many things with a credit card or charge card.

I like to pay cash for everything I buy.

To buy anything, other than a house or car, on installment credit is unwise.

SELF CONCEPT

I often worry that something I buy will turn out to be a mistake.

I like sports cars.

I can usually work for long periods of time around the house without tiring.

LEISURE, ENTERTAINMENT

I often work on a do-it-yourself project in my home.

We often go out to dinner or the theater together.

I like to serve unusual dinners.

COMMUNITY

I belong to one or more church or other related social organizations.

The community where I live lacks real leaders.

I am active in community projects.

TELEVISION

There is too much violence on television today.

Television is our primary source of entertainment.

I watch more television than I should.

MAGAZINES, NEWSPAPERS

Furniture advertising in magazines has an important influence on my buying decisions.

Consumer Reports and similar publications are very reliable sources of information about brands.

I study the grocery store ads in the paper each week so that I can make the best buys.

ADVERTISING

Advertising should be outlawed.

There is too much advertising on television.

My choice of brands for many products is influenced by advertising.

U. S. SOCIETY

Communism is the greatest peril in the world today.

America is too prosperous for its own good.

The unions are too powerful in America today.

RELIGION

If people were more religious, this would be a better country.

I belong to one or more church or other social organizations.

I often read the Bible.

EMPLOYMENT

In my job I work with my hands.

It is hard to get a good job these days.

In a job, security is more important than money.

PRICE SHOPPING, BARGAIN HUNTING

I shop quite frequently at discount department or discount grocery stores.

I usually look for the lowest possible prices when I shop.

I shop a lot for "specials."

FAMILY, WOMAN'S ROLE, MAN'S ROLE

My husband often goes grocery shopping with me.

My husband has a lot to say about the brands I buy.

When my husband does the grocery shopping, he buys too many things we don't need.

SHOPPING, GROCERIES

I don't think there is much difference between the brands in the grocery stores.

Before I go shopping, I sit down and prepare a complete shopping list.

I shop quite frequently at discount department or discount grocery stores.

IMPULSE BUYING

I am an impulse-shopper.

I feel that most of the buying I do is based on habit.

Sometimes, when I see a new product on the shelves, I will buy it just on impulse without worrying how much it costs.

INFLUENCE ON OTHERS

My friends or neighbors usually give me pretty good advice on what brands to buy.

I often seek out the advice of friends regarding which brand to buy.

I usually wait and see how other people like new brands before I try them.

CLOTHES

You can save a lot of money by making your own clothes.

Some of the new styles in hair and dress are a sign of moral decay.

I would like to be a fashion model.

HEALTH, DIET

A balanced diet is very important.

I serve some foods because they have certain health benefits.

If you don't eat a balanced diet, you won't be healthy.

DO-IT-YOURSELF

I know a lot about the mechanical aspects of cars.

I like to work with my hands.

When something begins to get a little old I want to replace it even when it's in good working order.

AUTOMOBILES

The next car my family buys will probably be a station wagon.

If I had my way, I would own a big, expensive car.

I always use the seat belts, even for short drives.

COOKING, FOOD

Fresh food is always better than canned or frozen.

The kitchen is my favorite room.

I like to try foreign foods.

HOUSEKEEPING

I keep my house very neat and clean.

I would like to have a maid to do the housework.

My husband is pleased with the way I manage the house.

SHOPPING, FURNITURE AND APPLIANCES

Convenience of location is the most important consideration in selecting a place to buy furniture.

It is harder to select good furniture than to select a good refrigerator.

I would never buy furniture at a discount store.

CHILDREN

My children have a lot to say about the brands I buy.

I don't like to see children's toys lying about.

Children should drink milk at every meal.

COSMETICS

Eye make-up is as important as lipstick.

Perfume should not be used to cover up other odors.

Everyone should use mouthwash.

Examples of published works using the complete AIO Item Library are numerous (24) (25) (26) (27) (28) (30) (36). These studies all utilized mail panels, but other examples can be found using virtually all the options of general survey methodology: personal interviews in the home, personal interviews at central locations, telephone interviews, mail interviews and various combinations of these. The most common response

made for AIOs has been the six-point agree-disagree scale, but others using three-, five- or seven-point scales can be found.

The previous section discussed the controversy over the use of general or specific life style instruments. A specific instrument is merely a subset of general items which are related in some way such as past studies of similar persons, theory or theoretical constructs shown in previous studies to be important to the purchase of the product or brand in question. This selection process represents the major criticism posed by detractors of life style analysis. Wells and Tigert (43), in fact, point out this problem in one of their first working papers on using AIOs to measure life styles in 1969. "Currently numerous AIOs come from intuition, hunches, conversation with friends, reading, head scratching, day dreaming, and group or narrative interviews." (P. 2.) To remove these sources of variables and remain solely within the mainstream of established theory would, however, remove one of the most beneficial and exciting aspects of life style analysis, that of finding new relationships. One would be hard pressed to make any sort of substantive case that consumer behavior is so exact a discipline that some head scratching is not beneficial. From where do the breakthroughs come? The whole idea behind this type of research is to learn more so that some day enough will be known to specify variables and the interrelationships in advance.

Many of the variables do in fact come from theory. Variables are sometimes measures of personality traits or social orientation used in standardized personality inventories. Sometimes variables have been dimensions developed and tested in previous work designed specifically for the analysis of consumer behavior (26) (28) (29). Thus, the

advantages of both approaches are combined in most life style analysis. Specific preselected standardized variables offer reliability by providing both norms and validity data. Including variables from other sources helps decrease the chance that the analysis will miss the mark. Wells (42) uses Evans' (44) work on automobile owners to illustrate this point. Wells felt Evans might well have asked, "Do any of these dimensions relate to the behavior I am studying?" and the answer might simply have been, "No." (42, p. 345.) Even when the variables selected do hit the mark, there is no assurance that all the variables measuring important associations have been included. Thus, the criticism that life style analysis does not stay within the framework of previous theory does not seem justified.

The other criticisms of life style measures also apply to the design of most measuring instruments. Problems such as presuming a fact which may not be true, including items of a sensitive or alleged nature, asking too many questions on the same topic and including items with indirect interpretations will always be present. The cure is researcher skill and experience, not the measurement technique.

Other bases besides the AIO format have been used in life style work. Several studies employed the Rokeach Value Scales (45, p. 31). Value, according to Rokeach (46, p. 159) is

> . . . an enduring belief that a particular mode of conduct or a particular end state of existence is personally and socially preferable to alternative modes of conduct or end states of existence."

Based on this definition, he feels that values provide the standards which tell us how to act or what to want and what attitudes to hold.

Following this concept Rokeach developed a value survey that includes 18 terminal and 18 instrumental values. Another measure used to scale life styles is the semantic differential. Several researchers have employed semantic differentials as measures of self-concept (47) (48) (49). Nelson (31) used a rather unusual approach incorporating a modified ranking method in which respondents were required to rank-order attributes with respect to how accurately they described the real and ideal self. And finally, one group of researchers reported using the Q-sort procedure. Greeno, Sommers, and Kernan (50) had respondents classify products via a Q-sort with respect to the degree that each product reflected their life style.

Other Uses of Life Style Measures in Marketing

Life styles have been employed successfully to develop advertising campaigns, position and reposition products or brands, improve the definition of market segments, identify retail patrons and help suggest new product opportunities. The most extensive and most highly touted uses of life style have been in the development of advertising campaigns. Some examples representative of approach are studies reported by Plummer, Ziff, Heller, Nelson and Young (40) (51) (33) (31) (38). Life styles benefit advertisers in several major ways. One is by identifying the kind of media to use and when to use it. Assistance in message preparation is the other major aid to advertisers. Life styles are said to help copywriters fit the message, the mood, the language, the style, the settings, and the costs of particular advertising campaigns to their intended audiences (52) (53) (51).

Another major use of life styles is positioning products, brands and services. Tigert's (24) (54) studies describing heavy users of carryout fried chicken and beer drinkers, Plummer's (13) study describing bank charge-card users and a study by Wells and Tigert (55) describing heavy users of eye make-up and shortening represent good examples of the usefulness of life styles as a positioning tool. Life styles also improve the definition of the target audience. Plummer (13) illustrates how much with an example from his work.

> Instead of defining the target demographically as a middle-aged housewife with large families and average incomes on usage terms as the frequent users, the price buyer, the vacation traveler, life styles demonstrate the diversity of those definitions, help tighten them up, and provide new definitions. In addition to middle-aged white collar or blue collar housewives, life styles provide definitions like 'housewife role haters,' 'old fashioned homebodies,' and 'active affluent urbanites' (p. 36).

All the work mentioned previously with respect to life styles applications to segmentation, advertising, positioning, and target market specification can be applied to describing patrons of retail outlets. More specifically, life styles have been used to describe similarities and differences among patrons of competing outlets, and to segment consumers within a given trading area. Examples of these approaches can be found in the works of May (56) and Reynolds and Darden (57).

The final use of life styles in marketing is the creation of new product opportunities. Plummer (58, p. 33) suggests that since life styles provide a great deal of information on the different needs, types and numbers of each customer type in the population, "one can examine existing products to see how well they are meeting the needs of consumer types." He goes on to provide the example of a situation in which a life

style analysis of a market revealed several segments having need for more and better alternatives for their children's "spur of the moment means" (58, p. 33). Based on these unmet needs, a sense of the potential and a rich definition of the target segments, new products were successfully developed to serve these segments.

Life Style Research in Bank Marketing

Only a small number of life style segmentation studies dealing with banks have been reported in the literature. However, many such studies have been referred to in the proceedings of conferences from groups such as The Bank Marketing Association. These studies have not been reported on in sufficient detail to determine much about them. Most reports indicate that life style information is helpful but no one appears willing to share his findings with the competition. The inception of bank cards several years ago brought forth the only published results of life style applications in banking. Two studies published by Mathews and Slocum (11) (12) found several interesting and useful relationships between social class and income and the usage of bank cards. They found, for example, that persons of the lower social classes tended to use their cards most for installment credit, but those in the upper classes used bank cards as a convenience. All users were found to have favorable attitudes toward credit; however, those using the cards for installment purposes were the heaviest users. The upper classes used their bank cards to purchase luxury and impulse items while the lower classes tended to purchase more durable and necessity goods. These divergences in usage were supported by life style relationships drawn from previous sociological work. The findings that installment users also place a low

priority on savings and tend not to defer gratification, for example, came from scales based on the results of earlier sociological studies.

Plummer's (13) study entitled "Life Style Patterns and Commercial Bank Credit Card Usage," extended the work of Mathews and Slocum by providing additional insights into the differences between users and nonusers of commercial bank charge cards. Plummer's approach differed in that his measured divergences in life style between users and non-users were drawn directly, not through inferences, from measures of social class and income.

Plummer used the 300 questions from the AIO Item Library developed by Wells and Tigert. The life style responses were compiled along with usage and demographic information. In addition to reinforcing Mathews and Slocum's results, it indicated the greatest potential use to be among the higher educated, middle-aged, higher income persons engaged in occupations categorized as professional. Additionally, the results of the life style portion of the questionnaire indicated that users were more contemporary in their thought, adopted a greater risk orientation, and involved themselves more heavily in services. Credit card users also tended to be more active, of a higher socioeconomic status, more urban, and tended to have more interests outside the home. Among the strongest implications were the higher priorities users placed on convenience and achievement orientation. Plummer also found two new factors. Previous work on adopters had not shown any differences in the thought patterns of ideology. Plummer found that users tended to be more contemporary in their thinking and were more likely to reject conservative, traditional concepts.

Electronic Funds Transfer Systems: A Status Report

This final section of the literature chapter presents in summary form the status, stimuli, potential issues and short-term prospects of electronic funds transfer systems. The status of current payment mechanisms is examined first, noting their size, strengths and weaknesses. This puts the need and opportunity for an alternative payment mechanism like electronic funds transfer systems in perspective. Next, the directions electronic funds transfer systems are most likely to take are analyzed by looking at each of the groups favoring various electronic funds transfer options and the reasons they want to see electronic funds transfer systems implemented. Then, some of the issues and concerns posed by electronic funds transfer implementation are presented. Finally, this section covers a short-term timetable for electronic funds transfer service introduction.

Current Status

Considering the array of technological advances that is encompassed by electronic funds transfer systems, it is easy to lose sight of the fact that they are merely another alternative means of processing payments. Before further discussing electronic funds transfer systems, it is instructive to consider the present systems of payment. The primary function of payment mechanisms is provision of a medium facilitating exchanges of value. Cash, checks and their surrogate, credit, are now so thoroughly infused that they have become essential in the operation of our present-day society. The oldest of the payment mechanisms, of course, are coins and currency. More recently, the large scale acceptance

of checks has provided a safer, less expensive means for making many types of payments, especially those to be mailed.

In recent years a host of other mechanisms has developed to satisfy specific needs. Travelers checks provide a convenient, safe alternative to cash for those travelling away from home. Money orders offer individuals without checking accounts a means of effecting rapid payments over long distances in a safe manner. Telegraph transfers are used when speed is essential. Wherever a sufficient need occurred, a payment mechanism surfaced to provide the desired service.

Each of these payment mechanisms involves a cost. With some payment mechanisms such as money orders or telegraph transfers, the cost is explicit and known to the users. In other cases such as currency or checking, these costs are not apparent.

Each of these alternative payment mechanisms offers distinctive features. Some, like checks and credit cards, offer in a relative sense more safety from theft and loss. Others such as cash or money orders are less vulnerable to fraud or misuse. These differences lead various groups such as individuals and business firms to use alternative payment mechanisms to different degrees. Each group also employs different payment systems depending on the transaction situation or need. Thus, a wide choice of alternative payment mechanisms exists; each choice aids in the consumation of particular types of exchanges.

The payment system shares a close relationship with another key activity in the efficient operation of the economy, the granting of credit. In recent years, retailers and banks have sought to make purchases easier by providing short-term credit systems. A host of credit cards provided by merchants and financial institutions has appeared as

a substitute for cash or checks. Because both the merchants and banks, as grantors and individuals, and businesses as users, perceive great benefits, this mechanism has received rapid and widespread acceptance.

It is this broad use and acceptance of credit cards which provides the base upon which electronic funds transfer systems are being built. In reviewing the current status of the payment mechanisms, it is also helpful to view the transaction volume occurring through the non-electronic funds transfer systems. The present payment system currently is dominated by the use of cash and checks, but the use of credit cards is growing as the common means of transacting retail business.

Currency and coins are produced under the direction of the Treasury Department and distributed through Federal Reserve district banks. In 1974, the circulation of bills was estimated to be 6.3 billion having a value in excess of $65 billion (4). About three billion new bills are produced annually of which about two-thirds are of the one dollar denomination. Approximately eight billion coins are drawn each year. The number of both bills and coins has been growing at a fairly steady rate of about 6 percent annually. It has been estimated that the annual number of cash transactions is over 200 billion. This accounts for 80 percent of all payment transactions. A majority of these coin and cash transfers is for less than one dollar.

In considering adopting a new payment mechanism, one must examine the relative costs of operating electronic funds transfer systems versus the cost of existing ones. Calculation of operating the cash payment mechanism presents seemingly innumerable difficulties. In addition to production costs, there are handling costs (movement and storage), protection costs (armored cars, guards, vaults), crime prevention costs

(police, insurance), and use costs (bank tellers, retail clerks, cash registers and other periphery equipment). According to a recent study, around $3 billion is spent annually for these handling costs, leading to an average cost of 1.5 cents per transaction (4).

Based on an examination of the costs of operating the cash system, it seems unlikely to be replaced to a significant extent in the near future. In the conduct of small transactions, which numerically account for four-fifths of all transactions, the cost per transaction is far below the costs of any competing mode.

Cash, however, is not without disadvantages. That which looms the greatest is the danger of theft. Increasing insistance of cab drivers, filling stations, food outlets, and other concerns to accept only the correct change during certain hours demonstrates that some occupations and locations have found the use of cash to be hazardous for the payer and for the recipient.

Transaction security concerns the government. Many experts feel far more currency is in circulation than is necessary, much of which does not seem to pass through normal banking channels (4). This occurrence apparently is most prevalent with $100 denominations. The suspicion is that large bills are being used for illicit purposes. On the other side of this issue is the concern for maintaining the individual's right to privacy.

Finally, a most important point--implementation of an electronic funds transfer system will not reduce the cost of operating the present cash system. Its cost of operation depends primarily on the number of locations handling cash and not the number or the size of the transactions.

This point must be borne in mind when considering the incremental cost of adding an additional payment mechanism.

The other principle payment mechanism involves checks. The check payment system is operated by commercial banks acting individually, through direct relationships with other banks and through local clearing houses. The Federal Reserve System assists by operating a national clearing house system and by establishing standards and procedures for operations.

Recent estimates set the annual number of transactions accomplished by check at slightly over 28 billion or just over $100 million each business day (6). Around 70 percent of these transactions involve individuals as either writers or receivers. Most of the checks written facilitate transactions between individuals and business firms. Historically, check usage grows at about 7 percent annually (6).

Checks account for over 90 percent of the total dollar value of payments transacted by cash or check (6). The typical check, however, is relatively small. Federal Reserve data show over half the checks processed are written for amounts of less than $50 (6). Around 1 percent of the volume of checks is written for amounts above $10,000, but these constitute around 80 percent of the dollar value of funds transferred by check (6).

Estimates of transaction costs of using checks vary widely. A representative figure appears to be 30 cents per transaction. This includes a cost to banks of 18 cents for their processing and clearing operation. The remainder is composed of estimates of printing, preparation, distribution and mail costs. Checks, while still subject to theft, offer greater safety than cash. This is the primary reason for rapid

increases in check usage (so rapid that one real concern is the overburdening of the present check handling system). Nevertheless, checks are a relatively expensive method of payment. Most consumers are unaware of the true costs since banks typically buy demand deposits from consumers by offering free or underpriced checking services. This presents no problem when the amount transacted is large, but for typical small payments, these costs are significant.

An additional problem is theft. Although the threat of check theft is less than that for cash, it is still a cause of concern, particularly to government agencies making mail payments to individuals.

Another area of concern with checks is the amount of float they create. The time required to deliver, clear and process checks causes a high level of float. Because of their inability to control the size of timing of float and thus its impact on monetary policy, regulators have shown an interest in other payment mechanisms since there appears to be no way to decrease processing time significantly without considerable costs (4).

An important point is that while costs of operating the cash payment system would not be reduced by instituting an electronic funds transfer system, a significant portion of the cost per transaction can be eliminated by shifting from a check system to an electronic funds transfer system.

Technically, credit cards to not constitute a payment mechanism. They aggregate a series of obligations into a single periodic payment. The credit card's provision of a convenient and widely accepted means of recording payment obligations incurred by individuals at retail establishments has led to their rapid rise in popularity. They are perceived

and used by individuals as a substitute payment mechanism. Thus, they are considered here. Credit cards are provided by bank card systems, individual banks, retailers such as airlines and petroleum companies, and several independent operators mainly in the travel and entertainment field.

Credit card popularity has grown swiftly in recent years. Reports show over five billion transactions were accomplished through this medium in 1973 (6). Continued growth can be expected since consumer acceptance is high and system coverage constantly improves. The average amount involved in a credit card transaction is around $14, and if petroleum company transactions are excluded, around $20 (6). Consumers at the end of 1974 were using credit cards to make loans in the amount of $8.2 billion (6).

The primary weaknesses of the current credit card system are the large losses suffered by issuers and the high verification costs incurred in controlling these losses. Part of the early losses were due to indiscriminant distribution to increase usage. The two bank card systems have already implemented electronic verification devices which have cut credit losses and verification costs. These systems form a natural linkage with electronic funds transfer systems.

Currently, the average credit card transaction cost is estimated at approximately 50 cents (6). Large reductions are anticipated with the further introduction of electronic systems to provide preauthorization and therefore greatly reduce the paperwork involved. Thus, the introduction of an electronic funds transfer system can offer transaction cost reductions in both checks and credit cards.

This then, is the current status of the present methods of payment. The present systems each appear to have a firmly established niche. None of the participants, consumers, business firms, financial institutions or the government appears seriously dissatisfied with the current system. Small transactions will continue to be handled by cash. Monetary transactions for large amounts will continue to be handled by check as long as individuals and businesses are allowed to do so. Transactions in the middle, those between $1 and $100, are the most likely candidates for a substitute payment mechanism.

Each of the presnt systems, cash, checks, and credit cards, has its weaknesses. Cash is cumbersome in large amounts and the risk of theft is high relative to the other payment mechanisms. Checks are becoming so popular that soon the processing system will overflow, slowing further the already long period required to complete a transaction. Checks are expensive to use even though customers do not perceive the actual costs. Checks are also subject to theft though not as easily as cash. Credit card issuers have shifted the high bad debt losses to themselves. This results in a high cost per transaction.

Given these relatively minor problems, one would not expect the current amount of pressure to implement an electronic funds transfer system. The pressures exist primarily because technology created new vistas of opportunities. In some circumstances these opportunities are providing the means for new competitors to serve traditional functions. In other cases, totally new types of services appear. Electronic funds transfer systems' possibilities run from completely replacing cash and checks to merely providing electronic credit orientation. Electronic funds transfer systems also provide the means to challenge the existing constricting

government regulations, social patterns and business practices. It is the market innovators, those firms searching out new ways to satisfy consumer needs profitably, which are providing the major thrust for electronic funds transfer systems.

The central question concerning electronic funds transfer is not if it will occur, but when and how it will occur. The next two sections discuss what directions electronic funds transfer systems are likely to take and the timing of their introduction.

Likely Directions

In order to predict the future form electronic funds transfer systems will assume, the major proponents of the new payment mechanism and their reasons for favoring electronic funds transfer systems should be considered. There are two primary sources encouraging changes in the present payment system structure.

The first source is various government agencies. The Social Security Administration, Health, Education and Welfare and the Air Force are examples of the agencies which have been actively involved in helping develop a system for "Preauthorized Procedures." These agencies are interested in a faster, more theft-resistant method of handling payroll and transfer payments.

Preauthorization techniques bypass a great many of the sequential steps involving moving pieces of paper to effect recurrent payments, (such as payroll, utility bills, insurance premiums, welfare payments, mortgage or rent payments, and so on). When a worker receives a pay-check he deposits or cashes it at a bank, thrift institution or store, or when that worker pays his utility bill by mailing a check, the check

itself must flow physically through the banking system back to the bank on which it was drawn and then be filed and returned to its originator.

Preauthorization procedures shorten this sequence by using electronic transmission instead of paper. The worker's pay is electronically credited to the bank or thrift institution account of his choosing; an agreed upon utility bill will be paid automatically at an agreed upon date after receipt of the bill. Paper records of the transaction will be provided to the individual periodically on one statement. The sequential return process is abbreviated.

The technical system required to support preauthorization techniques is a network of local but interconnected automated clearing houses. These provide the transmission points which can process payments almost instantaneously by electronic impulse instead of through the cumbersome physical passage of paper documents. Several automated clearing houses currently are in operation, and plans call for a nationwide network by 1978 (6). The existing automated clearing houses have been poorly utilized to date. A factor, of course, is their restriction to a few local areas. Growth of preauthorization procedures will be aided by government programs encouraging individuals receiving federal payments to accept direct electronic deposits.

The second major source of stimulation comes from those depository institutions and retail merchants looking for new ways to provide improved services to the customer thereby strengthening their own market position.

Traditionally, financial institutions have provided very limited hours of operation for customer service. This and the added inconvenience of getting to the institution during these hours led to enormous

numbers of checks being cashed at places of employment, food stores and other retail establishments. Several automated banking techniques have been proposed that would enable individuals to make deposits or receive cash, transfer funds between accounts, and even pay utility bills and installment accounts over greatly extended hours at convenient locations. The transactions would be processed electronically thereby reducing the paper handling necessary to maintain account records.

Of the devices possible to facilitate automatic banking, automatic teller or automatic bank machines are the form almost exclusively used to date. Approximately 3,000 automated teller machines are currently in use connected to existing bank structures (4). At the end of 1975, over 1,700 machines were on order (4). Many banks are formulating plans for installation of systems. The spread is likely to be rapid since consumer acceptance to date appears to be excellent.

A third system being considered for effecting electronic payments is Point-of-Sale devices. These systems, if successful, will supplement or replace current credit card systems and a large portion of the cash, checks and equipment used to record retail transactions by immediately transferring funds from a consumer's to a retailer's bank account. The systems under development generally capture data relating to the transaction (customer and merchant account numbers, merchandise, price and date) at the point of sale. The systems may be on-line, updating accounts immediately or collected for updating at the end of the business day. This system also provides the capability of transferring inventory record-keeping to the bank or thrift institutions. This service undoubtedly will be attractive to small retailers if it can be economically priced.

Point-of-Sale systems are the most expensive and most difficult to implement broadly. A number of experimental systems have been operated but they have proven to be very expensive. Coordination of planning between merchant and financial institutions utilizing electronic funds transfer systems for checkout, inventory control, payroll calculations and management information is far from being accomplished. Costs are extremely high relative to present modes and many controversies must be resolved concerning the kinds of features to be incorporated and the types of information to be handled. Merchants must somehow be convinced that the expensive addition of Point-of-Sale equipment which is not crucial to their business is somehow necessary. Also, some experts think Automated Teller Machines, while conditioning consumers to use electronic methods will relieve strains on the present system sufficiently so that it will be difficult for both merchants and financial institutions to reach the high volumes of usage necessary to make the installation of Point-of-Sale systems economically feasible (4).

Thus, the push for electronic funds transfer systems comes from two principle groups. One of these is government agencies interested in preauthorization techniques for disbursing payments to individuals. The Federal Reserve is also interested in electronic funds transfer systems since they will increase the velocity within the payment system thereby improving the accuracy and effectiveness of monetary controls by controlling float. The second stimulus is provided by innovators striving to grasp new opportunities through which to improve their market shares. Of the two most feasible electronic funds transfer models with which consumers will interface--automated banking techniques and Point-of-Sale devices--the former seems to be the clear choice.

The advent of electronic funds transfer systems requires overcoming regulatory, financial and technological hurdles. The Federal Home Bank lifted a key regulatory hurdle by authorizing federal savings and loan associations to experiment with remote service units permitting customers off-premises access to their accounts. The Comptroller of the Currency followed by authorizing national banks to provide similar services within a fifty-mile radius of a branch or home office. The Comptroller ruled that off-premises equipment did not constitute a branch and therefore the only requirement was written notification to his office thirty days prior to beginning operations. He subsequently remanded his statement, but the vast majority of experts feel that banks will soon be allowed off-premises operation.

Technology itself does not pose a barrier to electronic funds transfer implementation. All of the technology necessary to implement a full range of electronic funds transfer services is currently available. Current cost structures, however, are quite high necessitating large volumes of transactions to justify the financial investment. Most investments to date are considered long range and have been made to improve market share rather than immediate profitability. Future improvement in equipment should lead to less costly systems in the future; but even with present cost structures, net saving over present systems will occur as soon as adequate volumes are generated. Also, standards need to be adopted by different user groups insuring capability when full electronic funds transfer system status is achieved.

The next section reviews the major issues to be resolved as electronic funds transfer systems are introduced.

Issues and Concerns Posed by Electronic Funds Transfer Implementation

As ideas are proposed and debated concerning electronic funds transfer system implementation, many peripheral issues are surfacing. A recent study found five major areas of concern (4). They include: questions over control of automated entry devices, control of communications networks and clearing operations, attitudes of businessmen and individuals toward electronic funds transfer systems, protection of government interests, and development of compatability standards. The central questions generated by the study are listed by area of concern.

1. Entry Devices: Who will own or control the entry devices that will be operated in an electronic funds transfer environment? What requirements will be placed on those wishing to install entry terminals? How will the costs be charged or allocated?

2. Communication and Clearing Networks: Who will own or control the communications and clearing networks necessary to support electronic funds transfer services? Will access be unrestricted or limited? Who will set technical standards? Will these encourage or restrict competition in providing a wide range of services? Will liability practices, quality standards, fraud protection mechanisms, and entry identification techniques be adequate to protect users while not unduly restricting participation?

3. Businessmen's Concerns: Will basic business functions (for example, control over one's own credit operations and basic business practices in invoicing, cash management, and similar matters) continue to be controlled by the business involved, or will these tend to move into the hands of financial or service organizations? If this happens, will the changes have an impact on the viability, growth potential, and sense of identification of business organizations?

4.	Individual's Concerns:	Will consumer interests be guarded as they relate to choice of method of payment, availability of competitive systems from which to choose, equity of charges for system use, privacy protection, and legal protection with regard to product quality, error correction privileges, and similar matters?
5.	Government Concerns:	Will regulatory agencies be able to function effectively in the new environment, to assure de facto competition or judicious regulation in situations where competition is deemed impractical? How will present relationships among regulators' powers at the state and federal levels be altered?

The above issues can be cast in many different forms, but each relates to the impacts the many different possible electronic funds transfer structures will have on social, business, and regulatory patterns. The final section of this chapter concerns the probable timetable for introducing electronic funds transfer services.

Timetable for Short-Term Electronic Funds Transfer Services

Introduction

A number of uncertainties will moderate the specific directions to be taken and services to be introduced in the next few years. By far the greatest determinant will be the activities of the various regulatory agencies involved. The outcome of a number of pending court decisions will also have a significant impact, along with the growth of transaction levels for existing electronic funds transfer-like services.

At present, operators of on-premises automatic teller machines and Service Counter Terminals have demonstrated a net decrease in transaction cost and increasing market shares. A great deal of interest, expansion, and investment in this area and for remote automatic teller machines

can be expected in the next few years. Also, a good probability exists that these devices will incorporate some third-party payment capability within this time frame. Based on the backlog of orders held by equipment producers and the current high rate of consumer acceptance, the number of institutions adopting automated teller Service Counter Terminals should continue to increase rapidly.

On the other hand, the short-term outlook for Point-of-Sale devices does not appear particularly bright. To date, the major investments necessary to implement Point-of-Sale systems have not been made. Several studies using projected data indicate insufficient financial returns to substantiate the required investment in the foreseeable future (4) (6). The investment required to develop an operational Point-of-Sale system is much greater than that required for a system using automated teller machines. Retailers must also be convinced to expend resources on expensive equipment which, from their perspective, does essentially the same thing as their present equipment. Another expense is the high initial promotion costs. Large investments in both equipment and promotion will be necessary to generate the greater transaction levels needed for a positive cash flow within a reasonable time frame. Also, the major financial commitments recently made on other electronic funds transfer services like automated teller machines further reduces the financial community's willingness to commit the necessary additional resources. Some intermediate steps in the areas of check verification and credit authorization likely will occur.

A relatively firm structuring of a nationwide automated clearing house system should be achieved. Government pressure to allow direct payroll deposits and transfer payments will help advance this effort.

The exact pace will depend on the ability to provide an electronic pre-authorization system at a price competitive with existing check processing and composite paper check payroll deposits. There has been some serious discussion of government subsidization of such a system, at least initially. A determination must also be made of who will manage the interconnecting network. Prime candidates are the Federal Reserve and Bank Wire.

Another very likely occurrence will be upgrading of the two national bank card networks to on-line status for billing data transmission as well as current credit authorization capacity. This capability is possible as soon as individual member banks can accept the electronic messages. Some of the travel and entertainment networks such as American Express might also attain on-line capacity. It is likely, however, that these will be on a more limited basis. They probably will not facilitate funds transfers except on a very limited basis.

Widespread development of terminal systems for use in check verification by retailers is also likely. Finally, banks will probably begin to take over operation of retail billing, credit, and even inventory functions for some retailers.

The next few years likely will see an enormous amount of investment and organization. Those services of sufficient interest to consumers and government which promise opportunities for short-term returns will continue to evolve. Preauthorization procedures and automatic banking techniques are the most likely areas of development.

In summary, life styles have provided a useful tool for understanding markets. The main focus of this chapter centered on the ways life styles can assist efforts to segment markets. They can increase the understanding of present segments. They can contribute new and useful dimensions on

which consumers can be segmented, and they can be used to create new segments based on product- or brand-related interests, need, values as well as the more general aspects of life style. In addition to segmentation, life styles can be used: to select media and better design the messages for advertising campaigns, to position or reposition products or brands, to improve the definition of present market segments, to identify patrons of retail outlets, and to help discern new products opportunities.

This chapter also presented a brief account of the current status of electronic funds transfer systems. First, a brief overview of the present payment mechanisms was presented. The costs, size, advantages and disadvantages of cash, checks, and credit were discussed. It now appears that electronic funds transfer systems definitely will come into use as a payment mechanism. It should not replace cash for small transactions, those under one dollar or checks for the large transaction--those over $100. Electronic funds transfer systems likely will be used for most payments in this medium-value range. This size transaction represents a large portion of the total number of all transactions. Estimates are that ultimately electronic funds transfer systems should account for approximately 70 percent of the total number of transactions.

CHAPTER III

RESEARCH METHODOLOGY

The research design described in this chapter provided the basis for an examination of the relationships among an individual's utilization of automated teller machine facilities, his life style profile, demographic profile and his profitability to the bank as a customer. It also allowed evaluation of the hypothesized relationship that automated teller usage is partially explainable by an individual's life style profile. The design provides one means to demonstrate the relative advantages of combining life style, usage and profitability data to plan bank marketing strategies with respect to services. Finally, the research design provided an opportunity to determine if the market for banking services shows potential for segmentation by life styles.

The data utilized in the study came from both primary and secondary sources. The primary data collection was accomplished through personal interviews. The questionnaire included measures of each respondent's life style and selected personal characteristics. Customers from one of the largest North Carolina banks comprised the population frame. Customer bank records supplied needed secondary data.

Hypotheses

Five specific hypotheses were tested. They are listed in the order studied as follows:

Hypothesis One: Retail bank customers can be segmented into groups via life style analysis.

Hypothesis Two: Statistically significant differences in automated teller machine usage, i.e., behavior, exist between members of different life style groups.

Hypothesis Three: Individuals can be categorized as automated teller machine users or non-users using life style measures.

Hypothesis Four: The combination of life style measures with demographic measures provides a statistically significant improvement in the ability to predict the likelihood of automated machine usage over demographic measures alone.

Hypothesis Five: Persons belonging to life style groups which exhibit significantly (at the 0.05 level) higher automated teller machine usage also demonstrate significantly (at the 0.05 level) higher profitability to the bank as measured by the profitability index, constructed from the amounts the bank holds in time deposits, demand deposits and/or credit outstanding.

All five hypotheses are founded in marketing theory. The fundamental basis underlying the study is one of marketing's basic tenets, i.e., that different consumer "types" comprise a market and each type buys differently from the other. This study looks at two of the several general approaches to the field of segmentation theory. The oldest and most widely used method of segmentation actually reverses the underlying rationale of segmentation. It begins by selecting a behavioral variable such as usage rate as the segmentation base and then attempts to match segments with consumer descriptive characteristics. The approach to segmentation suggested in this research design follows more closely the underlying rationale inherent in the theory of segmentation. The direction of analysis classifies consumers into market segments by using consumer descriptive characteristics as the segmentation base. The task then becomes one of exploration of buying behavior similarities with segments and differences among segments rather than use of similar buying patterns as segmentation bases and then matching segments and consumer

descriptive characteristics. A third approach bases segments on customers' desires for product characteristics. Its rationale is similar. In essence, it posits that segments exist because consumers are looking for different combinations of product attributes. In practice, however, the analytical focus has been to identify the major variables of interest, i.e., consumer benefits, and match a segment with each benefit. The problem is that for most products, several benefits play important roles in a consumer's decision process. Thus, the delineation of segments by singular benefits tends in many cases to be highly artificial.

The first hypothesis directly examined the widely held belief that markets are composed of different customer types. The second and third hypotheses allowed testing of the proposition that life style and demographic variables can be used to predict automated teller machine usage, i.e., behavior. The fourth hypothesis assessed the marginal benefits of the life style variables in predicting the likelihood of automated teller machine usage. The fifth hypothesis tested the proposition that those persons using automated teller machines also tend to be more profitable as customers.

As in all empirical studies, limitations existed. Financial considerations limited the number of respondents to 100. Considering the statistical techniques employed, the sample size is adequate to insure valid testing of the hypotheses. The study is exploratory and largely descriptive in nature.

Data Sources

The data incorporated in the study came from two sources: a bank's records and personal interviews. The customer base of one of the largest

banks in North Carolina comprised the sampling frame. Technically, this frame is weak in that the bank's customers might not be typical of the population of those using banking services in North Carolina. Two factors dictated the choice of sampling frame. First, the secondary information concerning an individual's actual banking behavior could be provided most reliably by the bank's records, and second, the most accurate usage data could be obtained through these records. Although a technical weakness, the frame probably did not pose a serious problem. North Carolina allows branch banking. The bank supplying the data operates the largest number of branches and has the largest retail market share in the state. None of the North Carolina banks has thus far actively sought to differentiate itself. Also, none of the literature on bank selection decisions has shown the bank's image to be of great importance in customer bank selection. This does not mean image is not important, just that up to this time, none of the banks has actively sought to differentiate or segment itself via image and customers do not at this time find image of primary importance in selecting a bank. Thus, it seems reasonable to assume that the bank's present customer base fairly represents the banking population in North Carolina.

The procedure for collecting the required data was as follows. First, two customer lists were assembled from the bank's records: one of automated teller machine users, and one of non-users. Users were designated as those customers using an automated teller machine at least once each month. Bank records for the previous month are kept on tape. Including less frequent users would entail manually sorting each customer record. This would be prohibitively expensive in time and financial resources as total accounts in the area selected number in the hundreds of thousands.

Non-users were selected in a purely random fashion. A random starting point on the alphabetized customer list was generated from a table of random numbers. The next account was selected by dividing the total number of accounts less the number of automated teller users and business accounts by the sample size of 100. The resulting number added to the random starting number determined the next account selected. This procedure was repeated until 100 accounts were listed. If a user or business account turned up in the non-user listing, the next account was considered. This procedure was repeated until a non-user turned up.

The user sample was selected on a systematic basis. There were many more persons using the automated tellers a small number of times each month. Thus, the distribution of automated teller users, if scaled from light usage to heavy usage would be quite skewed toward the light user end. Since the major objective of the study was to examine and explain differences in automated teller machine use behavior, a higher proportion of heavy and moderately heavy users of automated teller machines was included in the user sample. This sampling plan insured an adequate representation in the analysis of those persons using automated tellers more frequently. The selection proceeded as follows. First, the users were divided into light users (those using an automated teller machine once or twice each month), moderate users (those using an automated teller machine three, four or five times each month), and heavy users (those using an automated teller machine six or more times each month). Then, using a procedure similar to that used for non-users, twenty light, forty moderate and forty heavy users were chosen. The sampling requirements for the study were somewhat unusual in that automated teller machine usage (in number of users) in the sample need not

be representative of the automated teller usage (in number of users) in the population. The important requirement analytically was to be sure light, moderate and heavy automated teller machine users were each adequately represented.

Each subset drawn was called upon by an interviewer, who with a cover letter, explained the purpose of the study (see the Appendix for a sample text). The respondent then completed the questionnaire in the presence of the interviewer. The interviewer checked each questionnaire before leaving to eliminate any missing data problems. Upon receipt of the questionnaire, the information was matched with the individual's bank records, recorded on computer cards, and then the code tying individual questionnaire and internal information was destroyed to protect individual privacy as much as possible.

Measurement

The central variable of interest in the study was the number of times each customer utilized automated teller machines over the period of a month. This information, along with the information on the balances in the customer's time, demand and loan accounts, came from the bank's records. The primary data used to generate the life style and demographic profiles were gathered via personal interviews. A sample questionnaire is provided in Appendix B.

The life style questions were drawn from the original diary list of questions created by Wells (14). The list included questions measuring various dimensions of an individual's activities, interests and opinions. A series of questions was asked about each dimension to achieve a richer feel for the dimension. Questions about the hobby

activities, for example, seek to determine specifically what kinds of hobbies are engaged in and why. Is this individual interested in active or passive hobbies? Is he a participant or spectator? Is he competitive? Does he enjoy and seek physical involvement, mental involvement or both? Does the element of danger excite him? The combinations of these kinds of questions along with various dimensions have been shown to correlate significantly with product usage, television program preferences and magazine readership (13). Thus, a picture emerges which is much more complete than demographic profiles, programs rating profiles of product specific measures. Table II lists the dimensions on which information can be gathered for each of these areas, activities, interests and opinions.

TABLE II

LIFE STYLE DIMENSIONS

Activities	Interests	Opinions
Work	Family	Themselves
Hobbies	Home	Social Issues
Social Events	Job	Politics
Vacation	Community	Business
Entertainment	Recreation	Economics
Club Membership	Fashion	Education
Community	Food	Products
Shopping	Media	Future
Sports	Achievements	Culture

In addition to the life style dimensions, seven demographic dimensions were collected. Included in the seven were those variables shown in previous studies of automated teller machine usage to be important. Specifically, respondents were asked to provide information concerning their age, educational background, income, occupation, whether their residence was owned or rented, and where and when banked. They were also asked their perception of the function of automated tellers. Respondents were not asked for specific numbers, but to check the appropriate range.

Analytic Methods

The data evaluation consisted of a number of forms of statistical analysis. In order of occurrence, the analysis utilized the following procedures: factor analysis, chi-square, multiple discriminant analysis, logit analysis and ANOVA procedures. Factor analysis was used to test the first hypothesis. The second hypothesis was tested with a chi-square comparison of group means. Multiple discrimiant analysis tested the third hypothesis. The fourth and fifth hypotheses were tested via logit analysis and ANOVA procedures, respectively.

The family of factor analytic techniques provides a series of multivariate mathematical procedures for synthesizing and summarizing a large number of variables into a few meaningful constructs. The approach used in this study was a common or iterated method with both a varimax and a quartimax rotation. Factor analytic techniques analyze the interdependence of variables. In order to test the first hypothesis, that retail bank customers could be segmented into groups using life style analysis, the results from the life style portion of the questionnaire were first

R-factor analyzed in an effort to summarize the major life style dimensions depicting similarities and differences among the bank's customer base. R-factor analysis determined which questions were most significant in determining how individuals should be grouped. This information determined which variables to incorporate in the Q-factor analysis.

After completing the R-analysis, the Q-factor analysis was run. The Q-analysis sorted people into groups. It operates by grouping individuals based on their simultaneous responses to a number of variables. This technique groups individuals such that the similarities within the groups and the distances among groups are maximized. Thus, groups were formed such that individuals demonstrating similar life styles grouped together. Two methods of inputing the R-analysis results were compared. One method involved inputing the factors' scores on each individual for each factor. The other method selected a life style measure for each dimension, which, in the researcher's judgment best respresents that factor. By definition, the variable which loads highest on a factor best represents that factor. The variable showing the highest numerical value on a factor, correlates most closely with the vector representing the whole factor. Sometimes a variable may be selected which loads close to the highest loading variable because it provides a better definition of the factor's overall meaning. In addition, a variety of computational methods, cutoff criteria for the number of factors and rotational criteria were tried to determine which combination provided the clearest, most meaningful solution.

The second hypothesis, that statistically significant differences in automated teller machine usage, i.e., behavior, exist between members of different life style groups, was tested by a chi-square procedure. The

non-parametric chi-square method was selected since the distribution of the test variable, automated teller machine users and non-users, in various life style groups did not exhibit a normal distribution. Also, the cell size varied across groups. Using the chi-square test, the proportion of automated teller machine users in the various life style groups was compared to determine if the proportion in each group was significantly different from the other groups taken one pair of groups at a time.

The third hypothesis, that individuals can be categorized as automated teller machine users or non-users with life style variables, was tested with multiple discrimiant analysis. The purpose of discriminant analysis in a predictive sense is to provide a function whereby individuals can be classified into a group on the basis of their responses to a set of independent variables. In this analysis the dependent variable was automated teller machine usage. The independent variables were selected by inputing the life style measures which showed significant chi-square differences between users and non-users into a stepwise discriminant procedure. In a structural sense, the stepwise analysis defined further those variables which are most effective in predicting automated teller machine user status and those factors which act as good discriminators between groups.

The stepwise procedure selects independent variables, life style measures, for entry into the analysis based on their discriminating power. In many instances the full set of independent variables contains several variables which are not very useful in discriminating between groups. By sequentially selecting the "next best" discriminator at each step, a reduced set of variables is found which discriminates more

efficiently than the full set. The process begins by selecting the life style variable which has the highest value on the selection criterion. This initial value is then paired with every other available variable, one at a time to produce a selection criterion. The pair with the highest selection criterion is selected to enter the analysis next. The new criterion with two variables is compared to the selection criterion with one variable. If the discriminant power of the two-variable solution is greater, the second variable enters and the process continues until the selection criterion at the previous step is larger than the selection criterion with the next added variable. Each variable must meet and maintain its discriminating power to remain in the function. If a variable in combination with the other variables selected falls below the selection criterion, it is deleted into a possibles set. So a variable eliminated in one step may re-enter at a later step. The stepwise criterion for selection used in this study maximized the Mahalonobis distance. With groups of equal size, as is the case in this instance, the criterion considers the distance between the group centroids and the homogeneity within the groups (see Figure 2).

The subset of life style variables selected in the stepwise procedure was then entered into a direct method which calculates the linear discriminant function. This function best classifies individuals as automated teller machine users or non-users based on their responses to the life style variables. This function is then used to classify individuals.

Each individual's discriminant score, Z_i, is a linear function of the independent variables. That is,

$$Z_i = b_0 + b_1X_1 + b_2X_2 + \ldots + b_nX_{ni} ,$$

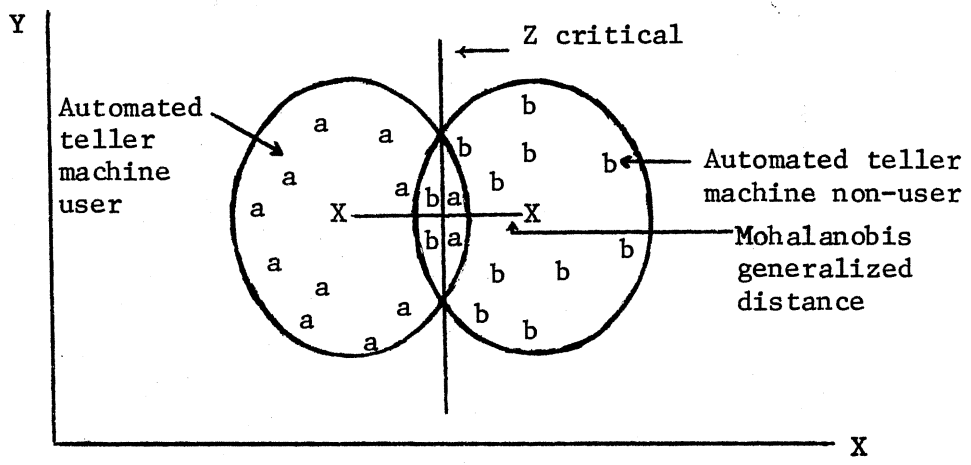

Figure 2. Two Centroids and the Linear Discriminant Function Separating Groups A and B: An Example with Two variables, X and Y

where

Z_i = the i^{th} individual's discriminant score,

b_0 = constant,

b_n = the discriminant coefficient for the n^{th} independent variable, and

X_{ni} = the i^{th} individual's value of the n^{th} independent variable.

Individuals are classified as follows:

-if Z_i > Z critical, classify individual i as an automated teller machine user;

-if Z_i < Z critical, classify individual i as an automated teller machine non-user.

The classification boundary is the locus of points (a straight line in this two-way case) where

$$b_0 + b_1X_1 + \ldots + b_nX_{ni} = Z \text{ critical} .$$

Operationally, to reduce upward bias the sample of 100 was split into two groups. The groups were composed of an equal number of randomly chosen members from each of the following four classifications: non-users, light, moderate and heavy automated teller machine users. One group was utilized to construct the discriminant function. The second group was then analyzed to test the model's predictive validity.

In order to test the statistical significance of the discriminant function, the Mahalanobis D^2 statistic is used. A simple transformation can be employed converting D^2 statistic into an F-statistic to test for statistical significance in the difference between the means of the two groups. This procedure provides a valid test of hypothesis two. Unfortunately, the D^2 statistic is a relatively poor indicator of the ability of the discriminant function to classify via the independent variable in an operational sense. The D^2 statistic, as any classical hypothsis test, is highly sensitive to sample size in determining if results are significant. Unfortunately, this problem is often aggravated in discriminant analysis. A method proposed to obviate this problem has been suggested by Morrison (59). He suggests calculating the proportional chance criterion. It estimates the probability of an individual being correctly classified as a user or non-user by chance. The results of the discriminant model are then compared to the chance model to determine how much better or worse the discriminant model classified individuals than did chance assignment of individuals to groups. The exact formulation of the proportional chance criterion is as follows:

$$C_{pro} = \alpha^2 + (1-\alpha)^2 ,$$

where

α = the proportion of individuals in group 1 (users), and

$1-\alpha$ = the proportion of individuals in group 2 (non-users).

In this instance $\alpha = 0.5$, so

$$C_{pro} = (0.5)^2 + (1-0.5)^2$$

$$= 0.50 \text{ or } 50 \text{ percent.}$$

Therefore, if the discriminant model classifies better than 50 percent of the individuals correctly, it is doing better than a chance assignment. The D^2 statistic was used to determine if the groups were significantly different statistically. The proportional chance criterion (C_{pro}) was then used to verify that the difference between the groups is significantly different in an operational sense in addition to being statistically significant.

The fourth hypothesis was tested to determine if combinations of life style measures with demographic measures provide a statistically significant improvement in the ability to predict the likelihood of automated teller machine usage over demographic measures used alone. Since the response variable, user status, is dichotomous, (he is either a user or not a user), a common least squares multiple regression procedure is inappropriate. An ordinary least squares regression model for binary variables could be employed; however, several problems of estimation would remain. First, because of the heteroskedastic nature of the disturbances, the least squares estimators of α and β are not efficient. A second and more important problem is bias. The errors do not have zero means, therefore the estimators of α and β are biased. The other problem concerns the distribution of the estimators α and β. Since the

residuals are not normally distributed, the estimators for α and β also are not normally distributed; thus, the classical tests of significance do not apply.

A maximum likelihood estimator like logit, probit or tobit should be used. Using the logit function as the estimator relaxes the requirement of a normally distributed response variable. To compare the two regression models, one with the life style measures and one without the life style measures, a likelihood ratio test is performed. The test is non-parametric which uses a chi-square distribution. The logit procedure calculates a log likelihood estimate for each regression equation. A maximum likelihood estimator is defined as follows:

> If random variable X has a probability distribution $f(x)$ characterized by parameters $\theta_1, \theta_2, \ldots, \theta_k$ and if we observe a sample $x_1, x_2, \ldots, x_n$, then the maximum likelihood estimators of $\theta_1, \theta_2, \ldots, \theta_k$ are those values of these parameters which would generate the observed sample most often.

In other words, the maximum likelihood estimator calculates the values of the function which maximizes the probability of classifying automated teller machine users and non-users correctly given a set of independent life style variables and demographics or demographics alone. Thus, two logit models are calculated, one in which only demographics are used and one in which both life styles and demographics are used.

A likelihood ratio test was performed to determine if a significant difference exists in the proportion of users correctly classified when life style measures are used in conjunction with demographics as opposed to using demographics by themselves. The likelihood ratio is the proportion and probability in discrete cases of an individual being correctly classified as an automated teller machine user or non-user. The difference

in the log likelihood of the regression estimator with and without the life style measures is compared to a chi-square distribution having degrees of freedom equal to the difference in the restricted estimator (estimator with demographics only) and unrestricted estimator (estimator with demographics and life style measures). The difference in the likelihood ratio and the chi-square value is compared to determine the level of significance of this difference. The log likelihood ratio is formulated as follows:

$$2[\ln(L_{DLS}) - \ln(L_D)] \sim \chi^2_{NDF} ,$$

where

ln = natural logarithm,

L_{DLS} = the likelihood with demographic and life style variables,

L_D = the likelihood with demographic variables, and

χ_{NDF} = chi-square distribution with N degrees of freedom where

N = (number of variables in the unrestricted estimator - number of variables in the restricted estimator).

The functional form of the logit is

$$Y = \frac{\gamma}{1+e^{\alpha+\beta_i x_i}} + \varepsilon(\gamma > 0,\ \beta < 0) ,$$

where

Y = value of the dependent variable,

e = 2.71828,

α = constant,

β = value of the independent variable,

x_i = independent variable i, and

ε = residual.

Graphically, the logistic function is illustrated in Figure 3.

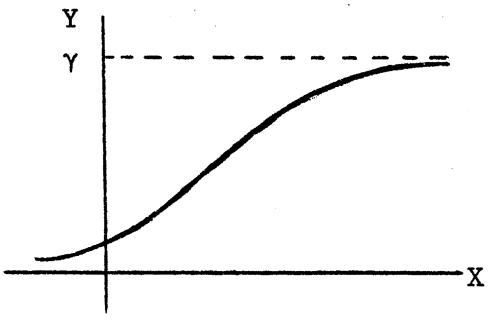

Figure 3. A Logistic Curve

The last hypothesis is that persons belonging to life style groups demonstrating significantly (at the 0.05 level) higher automated teller machine usage also demonstrate significantly (at the 0.05 level) higher profitability to the bank where profitability is defined in a crude sense as a profitability index based on a composite of an individual's time account, demand account, and loan account balances. The index accounts for the differences in the implicit interest rates of funds in different account types. Differences based on the value of funds in differing account types due to their effect on Federal Reserve requirements are not included. Since the purpose is to compare the relative profitability of automated teller machine users to non-users, the index provides a fairly precise measure of actual profitability as long as both users and non-users maintain roughly the same proportion of funds in each account type.

The statistical measure used to test the hypothesis was a difference of means test. A standard F-test was used to test the proposition that

users of automated teller machines are statistically significantly more profitable to the bank than non-users of automated teller machine facilities.

This chapter has put forth the five hypotheses to be tested in the study and the research methodology used to test the relationships indicated in the hypotheses. The next chapter presents the experimental findings.

CHAPTER IV

EXPERIMENTAL FINDINGS

This chapter reports the analytical results of the study. The analysis is organized around the five hypotheses posed in the methodology. First, some descriptive statistics which outline the underlying character of the primary and secondary data are presented. Next, the results from the R- and Q-factor analyses of the life style variables are discussed. This analysis forms the basis for evaluating the first hypothesis. The second hypothesis is then tested using a chi-square test of the proportion of automated teller users in each of the life style groups. Next, the results of the discriminant analysis are presented to test hypothesis three. The fourth hypothesis test employs multiple logit techniques. The final hypothesis is tested by combining the life style and secondary information on individuals' account balances. The mean expected values of the cost of automated teller users are compared to those of non-users to discern any significant statistical differences in the expected average value of the two groups to the bank.

The Descriptive Statistics

The means, standard deviations and results of a chi-square test of the life style and demographic measures provide a useful initial perspective.

Life Styles

Columns 1 and 2 of Table III present the means and standard deviations of the responses solicited in the primary data collection instrument. The means and standard deviations of the life style and demographic results are discussed separately since the demographic response categories varied in number. The life style data were collected using selected items from Wells' AIO Library and were measured on a standard six-point scale ranging from "definitely disagree" to "definitely agree." The mean responses varied from 1.767 on "If I had to choose between happiness and greatness, I'd choose greatness," to 5.4667 on the statement "Everyone should take walks, bicycle, garden or otherwise exercise several times a week." The standard deviations ran from a low of 0.0993 on the statement "Consumer reports and similar publications are good sources of information about brands" to a high of 2.448 in response to the statement "Pollution, regardless of present anxieties by some people, does not concern me." Eleven life style measures displayed standard deviations greater than 2.0. This variety in means and standard deviations indicated, at least superficially, that the measurement scales were structured in such a way that responses did not demonstrate a systematic bias toward the top or bottom of the scale.

The third column of Table III reports the chi-square value obtained by comparing the responses of users to those of non-users on each life style measure. The starred values indicate measures on which the probability of a significant difference between users and non-users equalled or exceeded 95 percent. Chi-squares with double stars indicate probable differences of 90-to-95 percent.

TABLE III

MEANS, STANDARD DEVIATIONS AND CHI-SQUARE VALUES FOR THE LIFE STYLE AND DEMOGRAPHIC RESPONSES

Statement	Mean	Standard Deviation	χ^2
In my job I tell people what to do	3.442	1.799	5.388
I buy many things with a charge or credit card	3.422	1.994	3.802
We will probably move once in the next five years	3.411	2.177	7.532
I like to pay cash for everything I buy	3.911	1.809	4.409
Television is a primary source of our entertainment	3.744	1.618	13.021*
I enjoy going to club meetings	2.744	1.597	2.659
I like to think I'm a bit of a swinger	2.478	1.545	10.852*
I often have a cocktail before dinner	2.389	1.779	5.336
I like ballet	2.800	1.756	5.545
When I must choose between the two, I usually dress for fashion, not comfort	2.422	1.586	1.671
I read one or more business magazines regularly	3.367	1.928	4.625
I am active in two or more service organizations	2.744	1.845	6.603
I do more things socially than most of my friends	2.900	1.551	5.728
I often serve wine with dinner	2.422	1.683	7.379
I buy at least three suits or outfits a year	3.778	1.959	10.663
I belong to one or more clubs	3.000	2.055	6.201
My friends or neighbors often come to me for advice	3.656	1.616	6.394
It is important to have a well-stocked first aid kit in the home	5.000	1.414	5.398
I would like to own and fly my own airplane	2.967	2.106	5.596
When I find a new brand I like, I usually tell my friends about it	4.467	1.609	0.321

TABLE III. (Continued).

Statement	Mean	Standard Deviation	χ^2
I often try new brands before my friends and neighbors do	3.633	1.510	3.565
I often shop at convenience stores	3.356	1.718	9.017
I usually read Time, Newsweek or U. S. News & World Report every week	3.356	1.968	3.455
I enjoy going through an art gallery	3.689	1.733	3.300
In the last ten years we have lived in at least three different cities	2.978	2.332	9.709*
I bought carry-out chicken in the past month	3.622	2.378	1.879
I had dinner in a restaurant in the past two weeks	4.867	1.891	1.774
I had a complete physical examination in the past year	4.767	2.023	4.556
I ate a meal in a drive-in restaurant in the past two weeks	3.144	2.396	3.382
I read a newspaper every day	4.978	1.642	4.868
I have used a bank charge card	4.122	2.336	5.871
I bowl, play tennis, golf or other sports quite often	3.767	2.045	9.371
I buy many things with a credit card or charge card	3.467	2.057	7.277
When I see a new brand on the shelf, I often buy it just to see what it's like	2.711	1.664	4.071
An important part of my life and activities is dressing smartly	3.611	1.633	2.260
I have helped to collect money for the Red Cross, United Fund or March of Dimes	3.944	1.996	7.856
I do a lot of shopping during the after-Christmas sales	3.267	1.714	3.430
Our family travels quite a lot	3.644	1.807	6.802
I always watch at least one television news program daily	4.744	1.713	11.444*
I exercise regularly	4.222	1.688	5.068
I like to work on community projects	3.278	1.587	4.452

TABLE III. (Continued).

Statement	Mean	Standard Deviation	χ^2
I like to watch or listen to baseball or football games	3.800	1.979	7.635
I do volunteer work for a hospital or service organization on a fairly regular basis	2.133	1.588	5.716
I shop a lot for "specials"	3.822	1.765	3.224
I usually have one or more outfits that are of the very latest style	3.667	1.836	4.569
I like bowling	3.744	1.975	2.980
I would feel very unhappy if I could not keep up with the standard of living of my friends	2.899	1.739	4.279
I like to go shopping	3.567	1.683	13.621*
I like to try new and different things	4.303	1.503	4.318
There are day people and there are night people; I am a day person	3.889	1.899	14.126*
I would like to have my boss' job	2.977	2.035	12.775*
When something begins to get a little old, I want to replace it even when it's in good working order	2.356	1.582	1.709
I like to do things that are bright, gay and exciting	4.233	1.407	9.750
I would hate to live in a house without a lawn	4.467	1.984	4.545
If marijuana were legal, I would try it	2.584	2.049	12.615
The next car our family buys will probably be a foreign car	2.489	1.782	9.945
I believe in looking after my family and myself and letting others shift for themselves	3.178	1.619	7.366
I would rather live in or near a big city than in or near a big town	3.202	1.829	7.016
I take good care of my skin	4.644	1.318	3.362
I think we should adopt the four-day work week right now	3.511	1.862	6.841

TABLE III. (Continued).

Statement	Mean	Standard Deviation	χ^2
I occasionally take a walk in the rain just for the experience	2.778	1.654	6.234
I never wear soiled or badly wrinkled clothes	3.764	1.919	1.455
On the job, security is more important than money	3.367	1.632	10.320
I like doing things which involve an element of danger	2.922	1.664	7.734
I find myself getting interested in, and proud of, the country or locality that my ancestors were from	3.900	1.755	7.045
Classical music is more interesting than popular music	2.956	1.628	6.628
New styles turn me on	3.111	1.618	7.236
I would like to take a trip around the world	4.922	1.651	5.910
If I had to choose between happiness and greatness, I'd choose greatness	1.767	1.237	8.889
I am in favor of very strict enforcement of all laws	3.989	1.625	11.670*
I usually look for the lowest possible prices when I shop	3.922	1.552	4.490
It is more important to live graciously than to save up a lot of money for the future	3.303	1.605	7.917
I am interested in politics	3.656	1.623	3.925
A woman's place is in the home	2.678	1.549	6.339
My greatest achievements are ahead of me	4.211	1.751	17.367*
My job requires a lot of selling ability	3.247	2.017	5.837
Young people have too many privileges today	3.967	1.769	10.827*
A party wouldn't be a party without liquor	2.500	1.769	6.735

TABLE III. (Continued).

Statement	Mean	Standard Deviation	χ^2
A person has a right to break a law he feels is immoral	2.382	1.442	4.616
I am happier now than ever before	4.444	1.299	1.578
I believe in taking direct action when I don't like something	4.589	1.280	2.994
I enjoy being in crowds	3.356	1.596	7.857
Before I buy a product, I often read the label very carefully	4.222	1.497	3.853
Pollution, regardless of present anxieties by some people, does not concern me	2.144	2.488	7.203
I expect our family will save more money in the next twelve months than we did in the last twelve months	3.900	1.774	5.967
I usually try to catch at least a glimpse of the setting sun	3.767	1.636	7.042
Things are changing too fast	3.811	1.609	18.226*
The people who complain most about unemployment wouldn't take a job if you gave it to them	3.944	1.638	11.463*
I like to work with my hands	4.730	1.363	3.977
I like to be considered a leader	4.500	1.400	7.154
I would be willing to pay one dollar more each month for electricity if it meant cleaner air	5.278	1.152	1.483
I need help in planning for the future financially	3.000	1.742	3.481
When it comes to recreation, time is more a problem than money	3.889	1.706	9.615
Public schools do at least as good a job today as they did twenty years ago	2.809	1.789	11.853*
I do not feel safe outside my house at night	3.011	1.745	16.544*
It's hardly fair to bring a child into the world with the way things look for the future	2.767	1.656	8.874

TABLE III (Continued).

Statement	Mean	Standard Deviation	χ^2
Sloppy people feel terrible	3.494	1.632	2.846
I often wish for the good old days	3.289	1.717	14.550*
I am satisfied with life	4.367	1.434	7.316
I would like to take a lesson in my favorite outdoor sport	4.211	1.712	3.931
Our days seem to follow a definite routine such as eating meals at a regular time, etc.	3.578	1.799	7.530
I think I have more self-confidence than most people	4.267	1.380	0.990
When I think of bad health, I think of doctor bills	3.633	1.777	9.201
I hate to lose anything	4.289	1.432	8.496
I sometimes influence what my friends buy	3.744	1.576	5.911
Bank cards like BankAmericard or Master Charge make shopping easier	4.289	1.837	10.558
If I had my life to live over, I would surely do things differently	3.733	1.785	10.668
No matter how fast our income goes up we never seem to get ahead	3.878	1.564	8.389
It is good to have charge accounts	4.078	1.560	4.805
Every man should own a dinner jacket	2.777	1.692	4.180
Men should not do the dishes	2.400	1.681	2.733
I like to eat unusual dinners	4.100	1.792	7.280
Everyone should take walks, bicycle, garden or otherwise exercise several times a week	5.467	1.030	5.481
Today most people don't have enough discipline	5.011	1.127	16.953*
Generally I am willing to drive a little further and serve myself to save a few dollars	4.278	1.594	5.063

TABLE III (Continued).

Statement	Mean	Standard Deviation	χ^2
Bank cards make it too easy to get into debt	4.822	1.337	13.102*
Consumer Reports and other similar publications are good sources of information about brands	5.044	0.993	5.558
I dread the future	1.922	1.384	1.710
I would rather go to a sporting event than a dance	3.856	1.905	4.968
I would rather spend money on a house than on a car	4.422	1.621	3.230
Automated tellers allow me to avoid hassles	3.955	1.758	11.801*
I am more independent than most people	4.656	1.163	6.335
I like parties where there is lots of music and talk	4.011	1.583	6.701
I thoroughly enjoy conversations about sports	3.533	1.664	1.074
I like to go for long walks	4.433	1.438	2.891
To me health is the most important thing in the world	4.578	1.453	11.898*
Automated teller machines make fewer errors than tellers	3.663	1.500	4.205
I wish I were younger than I am	3.078	1.616	12.717*
In this country, you have to shout to get what you deserve	2.978	1.499	4.723
It is just a myth that hard work leads to success	2.596	1.535	6.324
I am a very neat person	4.267	1.339	7.267
Movies should be censored	3.820	1.813	15.323*
Investing in the stock market is too risky for most families	3.833	1.616	8.447
Obedience and respect for authority are the most important virtues children can learn	4.356	1.292	3.448
I would never live next to someone of a different race	1.944	1.327	1.801

TABLE III (Continued).

Statement	Mean	Standard Deviation	χ^2
In my neighborhood, most people try to "keep up with the Jones'"	2.697	1.401	8.313
If I had my way I would own a convertible	2.278	1.696	4.822
I think I have a lot of personal ability	4.978	1.005	6.706
Automated tellers are so difficult to operate, they're not worth the trouble	2.278	1.492	19.353*
Machines like automated tellers are more efficient in carrying on routine banking transactions than using tellers	3.467	1.684	4.894
It is important to have face-to-face contact with my banker for routine transactions like deposits, withdrawals, or loan payments rather than to use a machine	3.411	1.954	26.142*
It is important to me that the present methods of doing business with my bank do not change	3.506	1.673	13.025*
I would rather live in an apartment or condominium than a house	1.798	1.333	12.604*
I would use an automated teller much more frequently if it were closer to my residence	3.258	1.812	11.989*
Now is a good time to buy a house	3.739	1.719	8.349
I like to experiment with new and different things	4.506	1.358	9.977
Sex	1.400	0.493	0.750
Occupation	2.687	1.956	7.513
Do you rent or own your residence?	1.742	0.440	0.202
Where do you most frequently bank?	1.247	0.434	3.250
If you are married, do both you and your spouse work?	1.522	0.503	1.963
Education	3.278	1.290	21.080*
Do you most often take care of your banking business when:	3.844	1.621	5.822

TABLE III (Continued).

Statement	Mean	Standard Deviation	χ^2
Age	2.518	1.019	11.118*
Income (combined family income if married)	3.151	1.376	8.242
When I think of automated teller machines, I tend to think of them primarily as:	2.124	1.223	5.987

Thirty-one of the one hundred forty-seven psychographic measures showed significant differences between users and non-users at the 95 percent level. Five additional variables showed probabilities of significant difference ranging from 90 to 95 percent. Table IV lists these variables and the relationship between users and non-users.

An examination of the life style measures showing significant differences between users and non-users indicates that users and non-users differed on eight of the fifteen major dimensions included in the questionnaire. Automated teller machine users and non-users differed in their perceptions of and preferences toward, leisure or entertainment, financial and credit beliefs, their self-concepts, fashion consciousness, mobility, their view of the U. S. society, status consciousness, and their views toward health and medical expenses. Table V illustrates these differences by grouping the statements which showed significant differences between users and non-users under the appropriate major dimensions.

TABLE IV

LIFE STYLE MEASURES SHOWING SIGNIFICANT CHI-SQUARE DIFFERENCES BETWEEN USERS AND NON-USERS OF AUTOMATED TELLER MACHINES

Statement	Probability of the Two Groups Being the Same	Direction of Difference* Agree	Disagree
Television is a primary source of our entertainment	0.023	Non-users	Users
I like to think I'm a bit of a swinger	0.054	Users	Non-users
I buy at least three suits or outfits a year	0.058	Users	Non-users
In the last ten years we have lived in at least three different cities	0.045	Users	Non-users
I bowl, play tennis, golf or other sports quite often	0.095	Users	Non-users
I always watch at least one television news program daily	0.043	Users	Non-users
I like to go shopping	0.018	Non-users	Users
There are day people and there are night people; I am a day person	0.014	Users	Non-users
I would like to have my boss' job	0.025	Users	Non-users
I like to do things that are bright, gay and exciting	0.082	Users	Non-users
If marijuana were legal, I would try it	0.027	Users	Non-users
The next car our family buys will probably be a foreign car	0.076	Users	Non-users
On the job, security is more important than money	0.066	Non-users	Users
I am in favor of very strict enforcement of all laws	0.039	Non-users	Users

TABLE IV (Continued).

Statement	Probability of the Two Groups Being the Same	Direction of Difference* Agree	Disagree
My greatest achievements are ahead of me	0.003	Users	Non-users
Young people have too many privileges today	0.054	Non-users	Users
Things are changing too fast	0.002	Non-users	Users
The people who complain most about unemployment wouldn't take a job if you gave it to them	0.042	Non-users	Users
When it comes to recreation, time is more a problem than money	0.086	Users	Non-users
Public schools do at least as good a job today as they did twenty years ago	0.036	Users	Non-users
I do not feel safe outside my house at night	0.005	Non-users	Users
I often wish for the good old days	0.012	Non-users	Users
When I think of bad health I think of doctor bills	0.101	Non-users	Users
Bank cards like BankAmericard or Master Charge make shopping easier	0.060	Users	Non-users
If I had my life to live over I would sure do things differently	0.058	Non-users	Users
Today most people don't have enough discipline	0.004	Non-users	Users
Bank cards make it too easy to get into debt	0.022	Non-users	Users
Automated tellers allow me to avoid hassles	0.037	Users	Non-users
To me health is the most important thing in the world	0.036	Non-users	Users
I wish I were younger than I am	0.26	Users	Non-users

TABLE IV (Continued).

Statement	Probability of the Two Groups Being the Same	Direction of Difference* Agree	Disagree
Movies should be censored	0.009	Non-users	Users
Automated tellers are too difficult to operate; they're not worth the trouble	0.001	Non-users	Users
It is important to have face-to-face contact with my banker for routine transactions like deposits, withdrawals, or loan payments rather than to use a machine	0.0001	Non-users	Users
It is important to me that the present methods of doing business with my bank do not change	0.023	Non-users	Users
I would rather live in an apartment or condominium than a house	0.027	Users	Non-users

*Indicates which group tends to agree or disagree relative to the other group. For example, on the first statement, non-users tended to agree more than users with the statement that television is a primary source of their entertainment.

As Table V indicates, non-users appear to have more passive tastes in leisure and entertaiment activities. Non-users relied more on television as a primary source of entertainment and agreed more that they watched at least one television news program daily. Users showed a greater interest in and activity in participant sports. They also were less inclined to enjoy shopping presumably because it meant less time for other more active leisure activities like tennis or boating. The reponses of users on this measure were actually bimodal. The women users,

TABLE V

LIFE STYLE STATEMENTS SHOWING SIGNIFICANT DIFFERENCES BETWEEN USERS AND NON-USERS GROUPED BY MAJOR DIMENSIONS

Leisure

Television is a primary source of our entertainment.
I bowl, play tennis, golf or other sports quite often.
I always watch at least one television news program daily.
I like to go shopping.

Self Concept

Adventurous

I like to think I'm a bit of a swinger.
If marijuana were legal, I would try it.
Things are changing too fast.
I often wish for the good old days.

Extroversion

I like to do things that are bright, gay and exciting.
Everyone should take walks, bicycle, garden or otherwise exercise several times a week.
I like to think I'm a bit of a swinger.

Achievement

I would like to have my boss' job.
On the job, security is more important than money.
My greatest achievements are ahead of me.

Satisfaction with Life

If I had my life to live over, I would sure do things differently.
I wish I were younger than I am.

Fashion Consciousness

I buy at least three suits or outfits a year.

Mobility

In the last ten years we have lived in at least three different cities.

TABLE V (Continued).

Society
I am in favor of very strict enforcement of all laws.
Young people have too many privileges today.
The people who complain most about unemployment wouldn't take a job if you gave it to them.
Public schools do at least as good a job today as they did twenty years ago.
I do not feel safe outside my house at night.
Today most people don't have enough discipline.
Movies should be censored.
Status Conscious
The next car our family buys will probably be a foreign car.
Health
When I think of bad health I think of doctor bills.
To me health is the most important thing in the world.
Finances
Bank cards like BankAmericard or Master Charge make shopping easier.
Bank cards make it easy to get into debt.
Automated tellers allow me to avoid hassles.
Automated tellers are so difficult to operate they're not worth the trouble.
It is important to have face-to-face contact with my banker for routine transactions like deposits, withdrawals, or loan payments rather than to use a machine.
It is important to me that the present methods of doing business with my bank do not change.

particularly those in higher income households, enjoyed shopping while the men were less inclined to enjoy shopping. Presumably, these were busy men who guarded their leisure time for recreation, while the women users, being in a higher income household, could afford more discretionary shopping and therefore enjoyed it more.

In terms of self concept, users appear more adventurous, more extroverted, more satisfied with life and more achievement-oriented than non-users. Users demonstrated a greater desire for adventure in that they tended to think of themselves more as swingers and would be more inclined to try marijuana if it were legal. Non-users felt things were changing too fast and agreed more with the statement, "I often wish for the good old days." Users showed their extroversion by preferring bright, gay, exciting things; by thinking of themselves as a bit of a swinger and by preferring to live in a condominium or an apartment more than non-users. Users' greater achievement orientation is borne out in their agreeing more strongly than non-users that they would like their boss' job, by being less interested in security and money in their job and by feeling more strongly that their greatest achievements were still ahead of them. Finally, users exhibited a more positive attitude toward and appeared more satisfied with life. Users were less likely than non-users to want to "do it differently if they could relive their lives." Users also disagreed more with the statement that they wished they were younger, indicating a greater satisfaction with their current situation.

Users also appeared to be more fashion conscious, agreeing more with the statement, "I buy at least three suits or outfits a year." Users were more mobile as illustrated by their greater agreement with the statement, "In the past ten years we have lived in at least three different cities."

Users perceived the state of our society differently from non-users in a number of respects. Non-users were in greater favor of strict enforcement of all laws, felt more strongly that young people today have too many privileges, and that young people do not have sufficient

discipline. Non-users felt more strongly that movies should be censored, did not feel public schools were doing as good a job as they did twenty years ago, felt less safe outside their homes at night and were in closer agreement that, "those who complain the most about unemployment wouldn't take a job if offered one." Thus, users on the whole appeared to have a more permissive and positive attitude toward the state of the U. S. society than non-users.

Users appeared more status conscious but less concerned with their health. Users agreed more that the next car they purchased would be foreign. Non-users agreed more that health was the most important thing in the world and tended to associate doctor bills more strongly with bad health. This might be because the user group tends to be younger and therefore in a life cycle stage where social status is a more immediate concern than is health. Also, since the younger group spends less on medical expenses, their concern over such expenses might be less.

The final major dimension on which users and non-users differed significantly was finances. Here the users showed a greater inclination to adopt innovations in making financial transactions. For example, they felt more strongly that bank cards like BankAmericard or Master Charge made shopping easier, and agreed less than non-users that bank cards made it too easy to get into debt. With respect to automated tellers, users felt the machines allowed them to transact routine banking business with fewer "hassles." Both groups, users and non-users, tended to feel that automated teller machines were not presently too difficult to operate, but users felt more strongly that operating an automated teller macine was not too difficult. Non-users felt that face-to-face contact with their banker was more imperative even for routine banking transactions and also seemed much less willing to change their present means

of transacting banking business. Next, the chi-square results from comparing users and non-users on the demographic measures are discussed.

Demographics

Ten demographic measures were collected. The results are summarized in Table VI. The tabulations in Table VI provide the data to compare user to non-user demographically. The demographic variables showing statistically significant chi-square differences between automated teller machine users and non-users were: where they bank, education level, age and income. Automated teller users showed stronger tendencies to bank near home, to have attained a higher level of education, to be younger and to have higher incomes.

Summary of Descriptive Statistics

The descriptive statistics provide a basic feel for the underlying character of the data. The statistics were broken into three classes: life style measures, demographic measures and the profitability indexes. The primary information, the life style and demographics, was generated via personal interviews. The secondary data, profitability indexes, were generalized from the bank's records.

Testing the Hypotheses

This section presents the results of testing the five hypotheses. The hypotheses were tested in order from one to five. The presentation and discussion of the analytical results are organized under the specific hypothesis to which they refer.

TABLE VI

DEMOGRAPHIC RESPONSES CLASSIFIED AS HEAVY, MODERATE, LIGHT AND NON-USERS

	HU[a]	MU[b]	LU[c]	NU[d]	Percentage of Users	Percentage of Non-Users
Sex						
Male	13	14	8	30	70	60
Female	4	9	2	20	30	40
Occupation						
Professional	4	10	3	13	34	26
Technical	1	4	2	4	14	8
Manager, Administrator	4	3	4	11	22	22
Sales	5	3	1	4	18	8
Craftsman	1			1	2	2
Operator				7		14
Laborer	1			2	2	4
Farm Worker						
Service Worker				2		4
Student		1		2	2	4
Housewife	1	2		4	6	8
Residence						
Rent	8	5	3	10	32	20
Own	9	18	7	40	68	80
Banking						
Near Home	13	21	5	38	78	76
Near Work	4	2	5	15	22	24
If married, do both work?						
Yes	3	6	6	20	30	40
No	3	12	4	17	44	34
Education						
Complete grade school				7		14
Complete high school	1	1		16	4	32
Some college	4	9	4	16	34	32
Complete college degree	8	11	3	7	44	14
Some graduate work	1	1	1	1	6	2
Complete a graduate degree	3	1	2	3	14	6
When do you take care of banking business?						
Grocery shopping	1	2		3	6	6
Make a special trip	4	5	2	12	22	24

TABLE VI (Continued).

	HU[a]	MU[b]	LU[c]	NU[d]	Percentage of Users	Percentage of Non-Users
Other shopping	2	1	1	2	8	4
Going to or from work	3	6	5	12	28	24
Sometime during the workday	4	3	1	15	16	30
You happen to be out	3	6	1	5	20	10
By mail				1		2
Age						
18-25	2	5	1	7	16	14
26-35	8	10	5	13	46	26
36-50	6	5	3	16	28	32
50 or over	1	3	1	14	10	28
Income						
$10,000 or less	2	1		14	6	28
$10,001 to $15,000	3	4	1	6	16	12
$15,001 to $20,000	4	8	4	12	32	24
$20,001 to $25,000	3	4	2	12	18	24
$25,001 or over	5	6	3	6	28	12
Statement about automated teller machines						
A cash dispenser when the bank is closed	3	11	4	27	36	54
A cash dispenser whenever I need money	6	3	3	9	24	18
A facility to transact my routine banking transactions such as making deposits, withdrawing cash or making loan payments after regular banking hours	1	3		8	8	16
A facility to handle all my routine banking transactions any time of the day or night	7	6	3	6	32	12

[a] HU signifies heavy user.

[b] MU signifies moderate user.

[c] LU signifies light user.

[d] NU signifies non-user.

Hypothesis One

Hypothesis one: retail bank customers can be segmented into groups via life style analysis.

R-Analysis of the Life Style Variables. To evaluate the first hypothesis, the life style data were initially R-factor analyzed. This procedure distilled the life style questions drawn into their major dimensions and helped verify which questions were measuring the same dimension. A variety of computational procedures were tried in an effort to find the combination of factoring method and rotational technique which provided the most meaningful pattern. Both principal-component and classical factor analyses were combined with orthogonal (varimax and quartimax) and oblique rotational methods. Two different stopping criteria were employed, the eigenvalue one rule, and that of setting the program to generate a predetermined number of factors. The second criterion is often useful when the researcher either knows or has strong suspicions concerning the underlying character of the data. In this study, the second criterion produced a more interpretable solution and one which agreed more with past studies. Fifteen major dimensions were included in the questionnaire. Using the eigenvalue one rule, a solution was generated which contained 32 rotated factors, many of which contained no significant loadings. Fifteen major dimensions were selected as important based on previous studies of bank card usage and innovative behavior. By directing the program to generate 15 factors, the results appeared more consistent with previous studies, produced factors of variable groupings which appeared more rational, and generated fewer factors having no significant variable loading.

Often an oblique rotation will produce more consistent factor patterns when using empirical data. In this instance, however, the varimax orthogonal rotation produced a slightly more consistent pattern and produced fewer factors with insignificant loadings.

Since the interviewing produced one hundred rather than the expected two hundred responses, the one hundred forty-seven life style measures had to be cut to one hundred prior to the first factor analysis. The forty-seven variables were selected for pruning based on two criteria. First, variables which appeared very similar in meaning were grouped together. Then, a given variable was selected based either on its chi-square value comparing users and non-users (if one measure showed a significant difference between users and non-users, it was retained) or on an arbitrary basis such that all the major dimensions were represented.

The results of the R-factor analysis employing a varimax rotation are displayed in Table VII. Since the underlying pattern in a 100 x 100 matrix is difficult to see clearly, two modifications were made to facilitate readability. One, only those factor loadings judged significant (0.4 or greater) were included. Two, variables or statements which loaded on the same factor are grouped together. The result of applying a variety of factoring techniques, rotational techniques and cutoff criteria showed the factor pattern to be quite robust. Little change in the factor pattern was observed regardless of the combination of techniques employed.

Twelve variables loaded significantly on the first factor. It appears to be a combination of several dimensions. Nine of the high-factor loadings are on statements having negative connotations concerning the state of our society. Two other high-factor loadings are on statements

TABLE VII

THE SUMMARIZED RESULTS OF THE R-FACTOR ANALYSIS WITH VARIMAX ROTATION ON THE LIFE STYLE MEASURES

Factor	Factor Loading
Factor 1 - Staid, Traditional, Pessimistic Outlook on Society	
It's hardly fair to bring a child into the world with the way things look for the future.	62
Today most people don't have enough discipline.	55
Things are changing too fast.	50
Young people have too many privileges today.	48
Obedience and respect for authority are the most important virtues children can learn.	43
The people who complain most about unemployment wouldn't take a job if you gave it to them.	43
Public schools do at least as good a job today as they did twenty years ago.	49
I do not feel safe outside my house at night.	45
When I think of bad health, I think of doctor bills.	47
If I had my life to live over I would sure do things differently.	47
I dread the future.	43
It is important to me that the present methods of doing business with my bank do not change.	42
Factor 2 - Youthfulness, Gregariousness, Optimism	
We will probably move once in the next five years.	42
In the last ten years we have lived in at least three different cities.	64
I like to think I'm a bit of a swinger.	69
There are day people and there are night people; I am a day person.	56
I like parties where there is lots of music and talk.	42
I would rather live in an apartment or condominium than a house.	42
If marijuana were legal, I would try it.	53
New styles turn me on.	45

TABLE VII (Continued).

Factor	Factor Loading
My greatest achievements are ahead of me.	53
Factor 3 - Innovativeness	
When I see a new brand on the shelf, I often buy it just to see what it's like.	69
I often try new brands before my friends and neighbors do.	50
I do a lot of shopping during the after Christmas sales.	-56
Factor 4 - Credit Usage	
I buy many things with a charge or credit card.	80
I like to pay cash for everything I buy.	-54
It is good to have charge accounts.	62
Bank cards like BankAmericard or Master Charge make shopping easier.	58
I buy many things with a credit card or charge card.	80
I have used a bank charge card.	51
Factor 5 - Self-Confidence	
I think I have more self-confidence than most people.	58
I hate to lose at anything.	66
I need help in planning for the future financially.	-45
Factor 6 - Adventurous	
I usually look for the lowest possible prices when I shop.	-56
I like to eat unusual dinners.	54
I like to do things that are bright, gay and exciting.	50
Before I buy a product, I often read the label very carefully.	-43
Factor 7 - Fashion and Appearance Consciousness	
An important part of my life and activities is dressing smartly.	51
I am a very neat person.	54
I like to go shopping	73

TABLE VII (Continued).

Factor	Factor Loading
I like to try new and different things	56
Factor 8 - Concerned about Health and Being Informed	
I had a complete physical examination in the past year	58
To me health is the most important thing in the world.	44
I read a newspaper every day.	41
I read one or more business magazines regularly.	41
Factor 9 - Satisfaction with Life	
I am happier now than ever before.	-64
I am satisfied with life.	-60
Factor 10 - Travel	
I would like to take a trip around the world.	46
I find myself getting interested in and proud of, the country or locality that my ancestors were from.	41
Factor 11 - Settled, Resistant to Change	
I always watch at least one television news program daily.	56
On the job, security is more important than money.	49
It is important to have face-to-face contact with my banker for routine transactions like deposits, withdrawals, or loan payments rather than to use a machine.	47
It is important to me that the present methods of doing business with my bank do not change.	45
Television is a primary source of our entertainment.	43
Our days seem to follow a definite routine such as eating meals at a regular time, etc.	40
Factor 12 - Homeownership	
I would hate to live in a house without a lawn.	54
It is more important to live graciously than to save up a lot of money for the future.	52
I would rather live in an apartment or condominium than a house.	-44

TABLE VII (Continued).

Factor	Factor Loading
Factor 13 - Convenience Oriented	
I often shop at convenience stores.	53
Men should not do the dishes.	54
I bought carry-out chicken in the past month.	39
Factor 14 - Community Spirit	
I do volunteer work for a hospital or service organization on a fairly regular basis.	50
Factor 15 - Cynic	
In this country, you have to shout to get what you deserve.	53

demonstrating a dissatisfaction with both the way their life had been spent and what will happen in the future. The final statement showing a high loading on factor one indicates a desire not to change the present methods of doing business with their banks.

Factor two appears to combine several of the self-concept dimensions with the mobility dimensions. Nine statements loaded significantly. Both the statements reflecting mobility in the questionnaire loaded on this factor. Several self-concept dimensions also loaded highly; among them were four showing extroversion, two showing an adventurous spirit, and one showing achievement orientation. The overall factor composite was one of youthfulness, gregariousness, upward mobility and optimism.

The third and fourth factors are quite clear. Factor three had only three statements load highly. Two directly indicated innovativeness. The third factor having a minus loading on "I do a lot of shopping

during the after Christmas sales" indicates innovativeness indirectly. Innovators are usually in the higher income groups in the social strata and, since by definition are interested in new items, are less likely to shop sales. Factor four loaded highly on six statements. All of them dealt with the use of charge cards or credit. Factor four offers an illustration of the reliability of the technique. Mistakenly, two identical statements were included. Both statements loaded on the same factor with the same numerical value.

Factor five loaded high on three variables, each of which (seemed) related to the respondent's self-confidence. Factor six appeared to denote an adventurous dimension with four statements loading highly. The seventh factor also had four statements loading highly. They all seemed directed toward appearance consciousness. Factor eight appeared to be a combination of a concern over health and a concern to be informed. Two statements favor each dimension. Factor nine is comprised of two statements loading highly. Both are self-concept dimensions having to do with the present degree of satisfaction with life.

Factor ten illustrates an interest in travel and seeing new things. Factor eleven seems to combine several dimensions. Six statements loaded heavily. They include statements relating to leisure, self-concept, and finance. The overview seems to be one of resistance to change, a settled dimension. Three statements loaded significantly on factor twelve. Each seemed to point toward home ownership. Factor thirteen had two statements load above 0.5. Several others loaded less heavily. Even though these do not meet the arbitrary cutoff for a high loading, their loadings on factor thirteen were at least 0.2 higher than the loadings on any other factor. The total perspective is convenience for people busy

working and relaxing. The fourteenth factor had only one statement load highly. It seemed to indicate community spirit. The final factor, fifteen, also loaded heavily on just one statement which personified a somewhat cynical view of the U. S. society.

In summary, a variety of factoring methods, rotational techniques and cutoff criteria were attempted to discern which produced the clearest underlying structure. The factor solution generated via a common factor procedure with a varimax rotation was selected. The dimensions in the order generated by the R-factor procedure appear to connote: tradition, cosmopolitanism, innovativeness, finances, self-confidence, satisfaction with life, travel, resistance to change, interest in homeownership, convenience, community spirit, and finally, a cynical view of society. Next, the results of the Q-analysis will be discussed.

Q-Analysis of the Life Style Variables. The function of the R-factor analysis, in essence, was to reduce the one hundred life style statements into a smaller, more manageable subset of homogeneous dimensions. Persons often interpret and respond to statements in ways which are not always obvious or intuitive. The R-factor analysis categorized the statements into groups of measures with similar meanings to the respondents. The loading on each statement in a group measured the extent to which that statement contributed to the meaning of the group. A higher loading indicated a better measure of the dimension. Thus, the R-factor analysis served to define the meaning of the statement clusters and pointed out those statements which best indicated a dimension.

Two methods of inputing the results of the R-analysis into the Q-analysis were attempted. The first inputed the factor scores of the

one hundred individuals on the fifteen factors. The second selected a representative variable from each factor. The second method produced clearer results. Actually, seventeen instead of fifteen variables were inputed since two of the factors appeared to summarize two dimensions each. Thus, two factors were represented by two life style variables each, and the remaining thirteen factors by one life style variable each. Table VIII presents the dimensions included in the Q-analysis and the statement chosen to represent each dimension. The Q-analysis correlated people with people. Thus, the factor pattern represents groups of similar individuals. As with the R-analysis, a variety of procedures was attempted using various cutoff criteria for the number of factors and rotational techniques. A five-factor representation appeared to provide the clearest solution. It was arbitrarily decided to use 0.6 as the cutoff loading. Thus, an individual was counted as a group member if he loaded at 0.6 or greater on a factor. Employing this criteria, forty-nine individuals loaded on the five groups. Table IX shows the results of the Q-analysis.

Normally, the factor scores are used to help discern what the various people grouping on a factor have in common. This information, combined with standard cross classifications on demographic and usage variables, completed the picture. Due to a quirk in the data, the factor scores from the Q-analysis were indeterminant. The R-analysis, which was used to reduce the number of variables to a more manageable subset, performed as expected, but also precipitated the indeterminancy in factor scores. The R-factor pattern was rotated using a varimax criterion. The **varimax** procedure produced factors which were orthogonal (uncorrelated). However, uncorrelated variables were desirable since they were to be used later

TABLE VIII

LIFE STYLE MEASURES SELECTED TO REPRESENT
THE MAJOR LIFE STYLE DIMENSIONS
IN THE Q-FACTOR ANALYSIS

Factor 1 - Staid, Traditional, Pessimistic Outlook on Society

It's hardly fair to bring a child into the world with the way things look for the future.

Today most people don't have enough discipline.

Factor 2 - Youthfulness, Gregariousness, Optimism

In the last ten years we have lived in at least three cities.

I like to think I'm a bit of a swinger.

Factor 3 - Innovativeness

I often try new brands before my friends and neighbors do.

When I see a new brand on the shelf, I often buy it just to see what it's like.

Factor 4 - Credit Usage

I buy many things with a charge or credit card.

It is good to have charge accounts.

Factor 5 - Self-Confidence

I think I have more self-confidence than most people.

Factor 6 - Adventurous

I usually look for the lowest possible prices when I shop.

Factor 7 - Fashion and Appearance Consciousness

I like to go shopping.

Factor 8 - Concerned about Health and Being Informed

I had a complete physical examination in the past year.

Factor 9 - Satisfaction with Life

I am happier now than ever before.

TABLE VIII (Continued).

Factor 10 - Travel
I would like to take a trip around the world.
Factor 11 - Settled, Resistant to Change
I always watch at least one television news program daily.
On the job, security is more important than money.
Factor 12 - Home Ownership
I would hate to live in a house without a lawn.
Factor 13 - Convenience Orientation
I often shop at convenience stores.
Factor 14 - Community Spirit
I do volunteer work for a hospital or service organization on a fairly regular basis.
Factor 15 - Cynic
In this country, you have to shout to get what you deserve.

as inputs into the regression equations used in testing hypothesis four. Lack of correlation in the independent variables reduces the problem of multicolinearity in the regression. As it turned out, the R-analysis did an especially good job of producing uncorrelated factors. The uncorrelated factors combined by chance to produce correlations on several individuals which turned out to be zero. One step in the computational procedure, to compute the factor scores, was to calculate the squared multiple correlation coefficients for each of the one hundred individuals with each of the other one hundred individuals. Since several of the correlation coefficients in the numerator of the equation went to zero,

TABLE IX

RESULTS OF THE Q-FACTOR ANALYSIS WITH QUARTIMAX ROTATION

	Group 1		Group 2		Group 3		Group 4		Group 5	
	RN[a]	FL[b]	RN	FL	RN	FL	RN	FL	RN	FL
Users of Automated Teller Machines	2	0.72	1	0.66	3	0.61			6	0.65
	10	0.66	4	0.77	13	0.75			46	0.64
	17	0.60	23	0.78	15	0.64				
	18	0.90			25	0.80				
	20	0.64			31	0.74				
	21	0.65			34	0.61				
	24	0.78			44	0.65				
	36	0.61			48	0.62				
	37	0.82								
	41	0.68								
	42	0.60								
	45	0.73								
Percent Users	75		50		47		0		33	
Percent Non-Users	25		50		53		100		64	
Non-Users of Automated Teller Machines	59	0.65	54	0.67	51	0.67	63	0.66	55	0.90
	85	0.66	69	0.70	56	0.66	67	0.70	71	0.77
	92	0.67	97	0.67	73	0.65	68	0.78	74	0.67
	100	0.76			77	0.71	72	0.60	88	0.69
					79	0.71	82	0.75		
					91	0.79	94	0.71		
					95	0.60				
					98	0.65				
					99	0.71				

[a]RN = Respondent Number (numbers 1 through 50 represent users of automated teller machines, numbers 51 through 100 represent non-users of automated teller machines).

[b]FL = Factor Loading of that respondent on that factor.

the squared multiple correlation coefficient went to zero. This produced such a small determinant that it could not be used in the computational procedure.

Thus, another method had to be found to interpret the Q-analysis. It was decided to determine if statistically significant differences existed between the different life style groups on their responses to the life style variables. If such differences and the direction of these differences could be ascertained, the groups' life styles might be interpreted. This information could then be combined with the cross classifications of usage and demographics to label the groups. A one-way analysis of variance using dummy variable regressions determined on which life style dimensions the groups differed significantly and in which direction. The response of each life style group was compared to the responses of the other life style groups one at a time. The output produces two statistics of interest. One is the probability that the mean responses of a given base group are statistically significantly different from the other groups' on each of the life style measures taken one life style measure at a time. The second statistic of interest is the sign of the coefficient B on the independent variable. It determines if the directions of the means of the other life style groups are higher or lower (in more-or-less agreement) than the base group. To illustrate, consider the independent variable (life style variable) measuring mobility. To determine if group one's response on the life style statement inferring mobility is significantly different from the other groups', a regression line is computed for each group. To do so, a set of dummy variables is created by treating each life style group as a separate independent variable and assigning scores for all groups depending on their presence or

absence in the group. Next, one group is selected as a base group. Then, the mobility response is regressed against the four remaining dummy variables in the following model:

$$R_i = \alpha + \gamma_1 G_{i1} + \gamma_2 G_{i2} + \gamma_3 G_{i3} + \gamma_4 G_{i4} + \varepsilon_i ,$$

where

R_i = response of individual i to the life style statement inferring mobility (1 through 6),

α = intercept,

γ_{1-4} = coefficient of the dummy variable G_1 through G_4,

G_{i1} = 1 if the individual i is a member of group 1, zero otherwise,

G_{i2} = 1 if the individual i is a member of group 2, zero otherwise,

G_{i3} = 1 if the individual i is a member of group 3, zero otherwise,

G_{i4} = 1 if the individual i is a member of group 4, zero otherwise, and

ε_i = error of the estimate for individual i.

The estimation of γ_1 was the difference in the mean response of group 1 from group 5 (the omitted or base group). Estimations for γ_2, γ_3 and γ_4 can be interpreted similarly. If the mean response of group 1 was higher, it indicated that group 1 agreed with the life style statement measuring mobility more than did the base group, group 5.

For those statements which showed significant differences between life style groups, the coefficients were compared to determine the direction of the difference. The results are presented in Table X.

Factor analytic techniques did not lend themselves to classical hypothesis testing. The quality of the results depended on the judgment of the researcher. The null hypothesis, that retail bank customers

TABLE X

DIRECTIONS AND MAGNITUDES OF DIFFERENCES FOR LIFE STYLE MEASURES SHOWING SIGNIFICANT DIFFERENCES BETWEEN THE FIVE SEGMENTS PRODUCED USING LIFE STYLES AS THE SEGMENTATION BASE

Life Style Measures	Group 2		Group 3		Group 4		Group 5	
	SL[a]	DOD[b]	SL	DOD	SL	DOD	SL	DOD
Base Group One								
It's hardly fair to bring a child into the world with the way things look for the future.	0.004	>	0.036	>	0.005	>		
Today most people don't have enough discipline.					0.27	>		
In the last ten years we have lived in at least three different cities.	0.002	<	0.0001	<	0.0001		0.0001	<
I am in favor of very strict enforcement of all laws.								
If marijuana were legal, I would try it.	0.02	>						
My greatest achievements are ahead of me.								
I often try new brands before my friends and neighbors do.								
When I see a new brand on the shelf, I often buy it just to see what it's like								

TABLE X (Continued)

Life Style Measures	Group 2		Group 3		Group 4		Group 5	
	SL[a]	DOD[b]	SL	DOD	SL	DOD	SL	DOD
I buy many things with a charge or credit card.	0.019	<			0.0030	<	0.046	<
It is good to have charge accounts.								
In this country, you have to shout to get what you deserve.								
I usually look for the lowest possible prices when I shop.			0.0007	>				
I like to go shopping.								
I had a complete physical examinination in the past year.								
I am happier now than ever before.								
I would like to take a trip around the world.								
I always watch at least one television news program daily.								
On the job, security is more important than money.								
I would hate to live in a house without a lawn.	0.012	<	0.009	<				
I often shop at convenience stores.			0.041	<	0.003	>	0.007	>
I do volunteer work for a hospital or service organization on a fairly regular basis.	0.036	>						

TABLE X (Continued).

Life Style Measures	Group 2 SL[a]	Group 2 DOD[b]	Group 3 SL	Group 3 DOD	Group 4 SL	Group 4 DOD	Group 5 SL	Group 5 DOD
In this country, you have to shout to get what you deserve					0.0007	>		
Demographic Measures								
Sex (> = More Females; < = More Males)			0.028	>				
Occupation (> = More White Collar; < = Less White Collar)					0.020	>		
Rent or Own Residence (> = More Rent; < = More Own)			0.017	>				
Where do you bank? Home versus Work (> = Near Work; < = Near Home)								
Educational Level (> = More Education; < = Less Education)					0.010	<		
When do you bank?								
Age (> = Older; < = Younger)			0.0003	>	0.016	>		
Income (> = More Income; < = Less Income)								
Perception of automated teller machines								

TABLE X (Continued).

Life Style Measures	Group 2 SL[a]	Group 2 DOD[b]	Group 3 SL	Group 3 DOD	Group 4 SL	Group 4 DOD	Group 5 SL	Group 5 DOD
Base Group Two								
It's hardly fair to bring a child into the world with the way things look for the future.	0.005	<						
Today most people don't have enough discipline.								
In the last ten years we have lived in at least three different cities.	0.002	>	0.0001	<	0.0001	<		
I am in favor of very strict enforcement of all laws.			0.010	>				
If marijuana were legal, I would try it.	0.021	<	0.0004	<	0.003	<		
My greatest achievements are ahead of me.			0.046	<				
I often try new brands before my friends and neighbors do.								
When I see a new brand on the shelf, I often buy it just to see what it's like.								
I buy many things with a charge or credit card.	0.020	>						
It is good to have charge accounts.								
In this country, you have to shout to get what you deserve.								

TABLE X (Continued).

Life Style Measures	Group 2 SL[a]	Group 2 DOD[b]	Group 3 SL	Group 3 DOD	Group 4 SL	Group 4 DOD	Group 5 SL	Group 5 DOD
I usually look for the lowest possible prices when I shop.								
I like to go shopping.								
I had a complete physical examination in the past year.								
I am happier now than ever before.								
I would like to take a trip around the world.								
I always watch at least one television news program daily.								
On the job, security is more important than money.								
I would hate to live in a house without a lawn.	0.009	>			0.009	>		
I often shop at convenience stores.			0.034	<	0.0331	>	0.0761	>
I do volunteer work for a hospital or service organization on a fairly regular basis.	0.036	<	0.044	<	0.0471	<		
In this country, you have to shout to get what you deserve.					0.028	>		
Demographic Measures								
Sex	> = More Females < = More Males							

TABLE X (Continued).

Life Style Measures	Group 2 SL[a]	Group 2 DOD[b]	Group 3 SL	Group 3 DOD	Group 4 SL	Group 4 DOD	Group 5 SL	Group 5 DOD
Occupation (> = More White Collar; < = Less White Collar)								
Rent or Own Residence (> = More Rent; < = More Own)								
Where do you bank? Home versus Work (> = Near Work; < = Near Home)								
Educational Level (> = More Education; < = Less Education)								
When do you bank?								
Age (> = Older; < = Younger)			0.039	>				
Income (> = More Income; < = Less Income)								
Perception of automated teller machines								
Base Group Three								
It's hardly fair to bring a child into the world with the way things look for the future.	0.037	<						
Today most people don't have enough discipline.								
In the last ten years we have lived in at least three different cities	0.0001	>	0.0001	>			0.0005	>

TABLE X (Continued).

Life Style Measures	Group 2		Group 3		Group 4		Group 5	
	SL[a]	DOD[b]	SL	DOD	SL	DOD	SL	DOD
I am in favor of very strict enforcement of all laws.			0.010	<				
If marijuana were legal, I would try it			0.0004	>				
My greatest achievements are ahead of me.			0.046	>				
I often try new brands before my friends and neighbors do.							0.050	>
When I see a new brand on the shelf, I often buy it just to see what it's like.							0.005	>
I buy many things with a charge or credit card.								
It is good to have charge accounts.								
In this country, you have to shout to get what you deserve.								
I usually look for the lowest possible prices when I shop.	0.0007	<						
I like to go shopping.							0.032	>
I had a complete physical examination in the past year.								
I am happier now than ever before.								
I would like to take a trip around the world.								
I always watch at least one television news program daily.								

Table X (Continued).

Life Style Measures	Group 2 SL[a]	Group 2 DOD[b]	Group 3 SL	Group 3 DOD	Group 4 SL	Group 4 DOD	Group 5 SL	Group 5 DOD
On the job, security is more important than money.								
I would hate to live in a house without a lawn.	0.009	>			0.009	>		
I often shop at convenience stores.	0.041	>	0.034	>	0.0001	>	0.0001	>
I do volunteer work for a hospital or service organization on a fairly regular basis.			0.044	>				
In this country, you have to shout to get what you deserve.					0.0004	>		
<u>Demographic Measures</u>								
Sex (> = More Females; < = More Males)	0.028	<						
Occupation (> = More White Collar; < = Less White Collar)					0.042	>		
Rent or Own Residence (> = More Rent; < = More Own)	0.017	<						
Where do you bank? Home versus Work (> = Near Work; < = Near Home)								
Educational Level (> = More Education; < = Less Education)					0.008	>		

TABLE X (Continued).

Life Style Measures	Group 2 SL[a]	Group 2 DOD[b]	Group 3 SL	Group 3 DOD	Group 4 SL	Group 4 DOD	Group 5 SL	Group 5 DOD
When do you bank?								
Age (> = Older, < = Younger)	0.0003	<	0.039	<			0.0016	<
Income (> = More Income, < = Less Income)								
Perception of automated teller machines								
Base Group Four								
It's hardly fair to bring a child into the world with the way things look for the future.	0.005	<						
Today most people don't have enough discipline.	0.027	<						
In the last ten years we have lived in at least three different cities.	0.0001	>	0.0001	>			0.0039	>
I am in favor of very strict enforcement of all laws.			0.058	>				
If marijuana were legal, I would try it.			0.003	>				
My greatest achievements are ahead of me.								
I often try new brands before my friends and neighbors do.								
When I see a new brand on the shelf, I often buy it just to see what it's like.							0.002	>

TABLE X (Continued).

Life Style Measures	Group 2		Group 3		Group 4		Group 5	
	SL[a]	DOD[b]	SL	DOD	SL	DOD	SL	DOD
I buy many things with a charge or credit card.	0.003	>			0.052	>		
It is good to have charge accounts.								
In this country, you have to shout to get what you deserve.								
I usually look for the lowest possible prices when I shop.								
I like to go shopping.								
I had a complete physical examination in the past year.								
I am happier now than ever before.								
I would like to take a trip around the world.								
I always watch at least one television news program daily.								
On the job, security is more important than money.								
I would hate to live in a house without a lawn.			0.008	<	0.009	<		
I often shop at convenience stores.	0.003	<	0.033	<	0.0001	<		
I do volunteer work for a hospital or service organization on a fairly regular basis.			0.047	>				

TABLE X (Continued).

Life Style Measures	Group 2 SL[a]	Group 2 DOD[b]	Group 3 SL	Group 3 DOD	Group 4 SL	Group 4 DOD	Group 5 SL	Group 5 DOD
In this country, you have to shout to get what you deserve.	0.0007	<	0.028	<	0.0004	<	0.017	<
Demographic Measures								
Sex (> = More Females; < = More Males)								
Occupation (> = More White Collar; < = Less White Collar)	0.020	<			0.042	<		
Rent or Own Residence (> = More Rent; < = More Own)								
Where do you bank? Home versus Work (> = Near Work; < = Near Home)								
Educational Level (> = More Education; < = Less Education)	0.010	>			0.008	>	0.023	>
When do you bank?								
Age (> = Older; < = Younger)	0.012	<					0.020	<
Income (> = More Income; < = Less Income)								
Perception of automated teller machines								

TABLE X (Continued).

Life Style Measures	Group 2 SL[a]	Group 2 DOD[b]	Group 3 SL	Group 3 DOD	Group 4 SL	Group 4 DOD	Group 5 SL	Group 5 DOD
Base Group Five								
It's hardly fair to bring a child into the world with the way things look for the future.								
Today most people don't have enough discipline.								
In the last ten years we have lived in at least three different cities.	0.0001	>			0.0005	<	0.004	<
I am in favor of very strict enforcement of all laws.								
If marijuana were legal, I would try it.								
My greatest achievements are ahead of me.								
I often try new brands before my friends and neighbors do.			0.025	<				
When I see a new brand on the shelf, I often buy it just to see what it's like.	0.032	<	0.025	<	0.005	<	0.002	<
I buy many things with a charge or credit card.	0.046	>						
It is good to have charge accounts.								
In this country, you have to shout to get what you deserve.								
I usually look for the lowest possible prices when I shop.								

TABLE X (Continued).

Life Style Measures	Group 2		Group 3		Group 4		Group 5	
	SL[a]	DOD[b]	SL	DOD	SL	DOD	SL	DOD
I like to go shopping.					0.03	<		
I had a complete physical examination in the past year.								
I am happier now than ever before.								
I would like to take a trip around the world.								
I always watch at least one television news program daily.								
On the job, security is more important than money.								
I would hate to live in a house without a lawn.								
I often shop at convenience stores.	0.007	<			0.001	<		
I do volunteer work for a hospital or service organization on a fairly regular basis.								
In this country, you have to shout to get what you deserve.							0.017	>

Demographic Measures

Sex > = More Females
< = More Males

TABLE X (Continued).

Life Stule Measures	Group 2 SL[a]	Group 2 DOD[b]	Group 3 SL	Group 3 DOD	Group 4 SL	Group 4 DOD	Group 5 SL	Group 5 DOD
> = More White Collar Occupation < = Less White Collar								
> = More Rent Rent or Own Residence < = More Own								
Where do you bank? > = Near Work Home versus Work < = Near Home								
> = More Education Educational Level < = Less Education							0.023	<
When do you bank?								
> = Older Age < = Younger					0.001	>	0.020	>
> = More Income Income < = Less Income								
Perception of automated teller machines								

[a]SL = significance level.

[b]DOD = direction of difference; > = agrees more, < = agrees less.

could not be segmented into groups with life style measures, can be rejected. As results of the Q-analysis depicted in Table IX demonstrate, the sample can be divided into life style groups. The five life style groups delineated in the Q-analysis, however, did not show clear descriptive differences. The factors on which the life style groups differ become clearest when comparing the group with a heavy proportion of users to those groups with a heavy proportion of non-users. Thus, the life styles of automated teller machine users were different from those of non-users and the retail bank market was divisible into life style segments but the differences in the life style segments were not clearly definable. Based on these results, it would seem that life style measures should be used to help plan the bank's marketing strategy for its automated teller machines. Based on this sample, however, it does not appear that life styles should be used to form the basic segments to which the bank appeals.

Hypothesis Two

Hypothesis two: statistically significant differences in automated teller machine usage, i.e., behavior, exist between members of different life style groups.

The second hypothesis was tested using a chi-square procedure. The test of this hypothesis required a non-parametric method since the distribution of the proportions of users in the various groups does not follow a normal distribution. Table XI shows the results of the chi-square test of comparing the proportion of users in each of the five life style groups. The null hypothesis, that no statistically significant differences in automated teller machine usage exist between members of

TABLE XI

A COMPARISON OF THE PROPORTIONS OF AUTOMATED TELLER USERS AMONG THE LIFE STYLE SEGMENTS

	Chi-Square	Probability of the Mean Proportions of Users Being the Same
Group 1 to Group 2	1.890	0.1692
Group 1 to Group 3	3.044	0.0811
Group 1 to Group 4	10.000	0.0016*
Group 1 to Group 5	4.200	0.0404*
Group 2 to Group 3	0.000	1.0000
Group 2 to Group 4	3.438	0.0637
Group 2 to Group 5	0.343	0.5585
Group 3 to Group 4	4.038	0.0045
Group 3 to Group 5	0.489	0.4844
Group 4 to Group 5	2.037	0.1535

different life style groups, can be rejected. Differences significant at the 0.05 level do occur in comparisons between three of the groups. The greatest difference was found in comparing group one to group four. The probability of the proportion of users being the same in both groups is 0.0016. Group one has a significantly higher proportion of automated teller machine users than group four. Group one also showed a significantly higher proportion of users than group five. The probability of the proportion of users being the same in both groups is 0.0404. Groups three and four were the other two groups showing a significant difference

at the 0.05 level in proportion of users in each group. Group three had a significantly higher proportion of users than group four. The probability of usage being the same in both groups three and four is 0.0445. If group three were significantly different from group four, group two would also be expected to be significantly different. The result of comparing the proportion of users in group two to group four was not significantly different at the 0.05 level. The probability of the proportion of users being the same in both groups is 0.0637.

The results of hypothesis two bear out the conclusion drawn from hypothesis one. Retail bank customers can be segmented into life style groups. These groups, in a statistical sense, show significant differences in automated teller machine usage. In an operational sense, however, life style measures are better utilized to provide supplemental information for management decisions than to provide the base upon which the market for automated tellers should be segmented. Thus, life style measures are a valuable addition to the stock of information upon which bank marketing strategy decisions must be made. The life style measures will help the bank managers assess the implications of applying various marketing strategies rather than providing a base for which to plan strategies.

Hypothesis Three

Hypothesis three: individuals can be categorized as automated teller machine users or non-users based on their responses to a series of life style measures.

This hypothesis concerns the ability of life style measures to classify group members. To select the input variables, a chi-square test was performed comparing the responses to the 156 life style measures of

automated teller machine users and non-users. The results showed users responding in a significantly (at the 0.05 level) different manner from non-users on 35 of the 156 variables. These 35 variables were inputed into a stepwise discriminant procedure. The stepwise procedure determines the combination of variables which best discriminates between users and non-users. Table XII shows the fourteen variables chosen by the stepwise procedure. The variables are listed in the order in which they enter the stepwise function. The standardized discriminant function coefficients are also included. These coefficients can be interpreted in the same manner as beta coefficients are interpreted in a regression. The larger the absolute value of the coefficient, the greater is its discriminating power.

The stepwise discriminant procedure incorporated variables from nine categories of life style dimensions. The life style measures selected were variables having to do with finances and credit usage, status consciousness, the state of society, leisure activities, achievement orientation, travel, satisfaction with life, concern over health, and mobility.

The sample of 100 was randomly split into two groups each containing 50 individuals, 25 users and 25 non-users. One group's responses to the fourteen life style measures selected by the stepwise procedure were entered into a directly discriminant procedure. It estimated a functional relationship which misclassifies the fewest number of individuals by considering the distance between groups and the homogeneity within the groups.

Classical Test. To determine if life style measures can classify individuals as users or non-users of automated teller machines, two tests were performed. The first was a classical hypothesis test. The null hypothesis states that a statistically significant difference does not

TABLE XII

THE SET OF OPTIMUM DISCRIMINATORS OF AUTOMATED TELLER USAGE AS DEFINED BY THE STEPWISE DISCIMINANT PROCEDURE

Life Style Measure	Standardized Discriminant Function Coefficient	Importance Rank in Defining the Discriminant Function
It is important to have face-to-face contact with my banker for routine transactions like deposits, withdrawals, or loan payments rather than to use a machine.	0.34988	1
Movies should be censored.	-0.12691	14
Today most people don't have enough discipline.	-0.34750	2
The next car our family buys will probably be a foreign car.	0.21921	5
I always watch at least one television news program daily.	-0.18582	8
My greatest achievements are ahead of me.	0.22359	4
I like to go shopping.	-0.16302	9
I do not feel safe outside my house at night.	-0.19394	7
Young people have too many privileges today.	0.22383	3
I wish I were younger than I am.	0.20266	6
In the last ten years we have lived in at least three different cities	0.14905	12
Automated tellers are so difficult to operate they're not worth the trouble.	-0.16299	10
To me health is the most important thing in the world.	0.14074	13
Things are changing too fast.	-0.15873	11

exist between automated teller machine users and non-users as defined by life style measures. The null hypothesis was tested using the Maholonobis D^2 statistic. The D^2 statistic is the generalized measure of the distance between the centroids of the two groups, users and non-users. The computed D^2 statistic is 3.9958425. After a transformation, it becomes an F-statistic. Thus, the null hypothesis can be expressed as Ho: $\overline{X}$ users - $\overline{X}$ non-users = 0, or the distance between the mean of the user and non-user groups is 0. The F-test resulted in a probability of 0.001 of Ho being true. Thus, the null was rejected and hypothesis three, that individuals can be categorized as automated teller machine users or non-users using life style measures, was accepted.

Operational Test. While the test of the D^2 statistic demonstrates statistical difference, it is a relatively poor indicator of the discriminant function's operational usefulness. The D^2 statistic, like any classical hypothesis test, is highly sensitive to sample size in determining if the results are significant. The second test of hypothesis three overcame this problem. A proportional chance criterion was calculated. It estimated the probability of an individual being correctly classed as a user or non-user based on chance. The proportional chance criterion was then compared to the proportion of individuals correctly classified by the discriminant function. The discriminant function was estimated using one-half the sample. Its power of classification was based on the number of misclassifications produced when the discriminant function built on the first half of the sample was applied to the second half of the sample. If the discriminant function correctly classifies a higher proportion of individuals than the proportional chance criterion, the discriminant function can be said to show operational validity. It

is entirely possible for the D^2 statistic to show a statistically significant difference between groups but predict user status correctly with a lower probability than a chance assignment.

The proportional chance criterion was estimated at 50 percent. The discriminant function built using the fourteen life style measures classified individuals as automated teller machine users correctly 92 percent of the time and automated teller machine non-users 72 percent of the time. For both groups, users and non-users, the discriminant function built with life style measures classified individuals much better than a chance assignment. Hypothesis three, that individuals can be categorized as automated teller machine users or non-users with life style measures, was accepted in both a statistical sense and an operational sense.

Hypothesis Four

Hypothesis four: the combination of life style measures with demographic measures provides a statistically significant improvement in the ability to predict the likelihood of automated teller machine usage over demographic measures alone.

If life styles by themselves are an effective discriminator of automated teller user status, it would also be important to determine if they do a better job than demographics alone, since life style measurements are considerably more costly to collect and analyze. Hypothesis four answered this question by comparing the predictive ability of demographics alone, with the predictive ability of life style measures used in conjunction with demographics. Two predictive models were constructed. The dependent variable in each case was automated teller usage. One of the models was restricted. It included only demographic measures as independent variables. The second model was unrestricted. It included

both demographic and life style measures as independent variables. Since the response variable (user status) is binary, a common least squares procedure is inappropriate. In addition, because the distribution of the estimators α and β is not a normal one, classical significance tests did not apply. Instead, a maximum likelihood estimator, logit, was used. The logit manages both binary response variables and heteroskedastic disturbances.

To compare the demographic model with the combined model using both life styles and demographics, a likelihood ratio test was performed. The null hypothesis stated that no significant difference in the ability to predict the likelihood of automated teller machine usage occurred when life style measures were added to a model predicting usage with demographic variables alone.

The likelihood ratio test was performed by subtracting the natural logarithm of the likelihood estimates of the model with demographics from the natural logarithm of the likelihood estimate of the model containing life style and demographics. The result was multiplied by two and compared to a chi-square distribution distributed with 14 degrees of freedom. The degrees of freedom equalled the difference in the number of variables in the two models. The combined model, unrestricted, had four demographic and fourteen life style variables for a total of nineteen variables. The restricted model, using demographics alone, had four variables.

$$2(\ln L_{DLS} - \ln L_{D}) \sim \chi^2_{14\ DF}$$

$$2(-9.53670779 - (-46.8247407) \sim \chi^2_{14\ DF}$$

$$74.58 \sim 25.00 \text{ at } 0.05 \text{ level}$$

$$31.00 \text{ at } 0.005 \text{ level}$$

On the basis of the likelihood ratio test, the null hypothesis was rejected. Life style variables added very significantly to the ability to predict automated teller machine usage.

Perhaps the desirability of using life style measures is more clearly illustrated by examining the probability estimates of correct classification for the logit model with life styles and demographics compared to the logit model using demographics alone. Table XIII shows the probability frequencies for both models. The probabilities shown in Table XIII are the frequencies of individuals being correctly classified as to user status. For example, using the model with life styles and demographics, correct predictions of an individual's user status can be obtained 100 percent of the time for 40 of the 90 people included in the sample and 90 percent of the time for 76 of the 90 people included in the sample. The model using demographic measures alone cannot guarantee to predict user status for any individuals 100 percent of the time and 90 percent of the time will predict correctly 14 of the 90 individuals in the sample. Comparing the two models, predictive rates showed that operationally, the model with life style variables was vastly superior to the model using only demographics. Ninety percent of the time the demographic model classified correctly 16 percent of the individuals by user status while the model with life styles added to the demographics classified correctly 84 percent of individuals by user status.

Again, as tested in hypothesis three, life styles were shown, in both a statistical and operational sense, to be a very important measure for predicting whether an individual will or will not use an automated teller machine.

TABLE XIII

PROBABILITY FREQUENCIES OF THE LOGIT ESTIMATOR FOR THE MODEL USING DEMOGRAPHIC MEASURES AND THE MODEL USING DEMOGRAPHIC AND LIFE STYLE MEASURES

	Model Using Demographic Measures		Model Using Demographics and Life Style Measures	
Probability	Frequency	Cumulative Percent Correctly Classified by User Status	Frequency	Cumulative Percent Correctly Classified by User Status
.00 - .09	0		1	100
.10 - .19	2	100	0	0
.20 - .29	6	98	0	0
.30 - .39	10	91	0	0
.40 - .49	6	80	2	99
.50 - .59	11	73	3	97
.60 - .69	12	61	2	93
.70 - .79	13	48	1	91
.80 - .89	16	33	5	90
.90 - .99	14	16	36	84
1.00	0	0	40	44
Total Number of Individuals in the Sample	90		90	

Hypothesis Five

Hypothesis five: persons belonging to life style groups which exhibit significantly (at the 0.05 level) higher automated teller machine usage also demonstrate significantly (at the 0.05 level) higher profitability to the bank as measured by a profitability index constructed from the amounts the bank holds in time deposits, demand deposits and/or credit outstanding.

To evaluate the last hypothesis, a profitability index was constructed. The index was weighted by the value of funds to the bank in an individual's demand deposit, time deposit, cash reserve (a combination overdraft and small personal loan feature where the individual can write a check for up to a certain amount over the balance in his account), and BankAmericard accounts. The average balance over a three-month period was inputed into the index function to estimate a value of each individual to the bank. The means of the index values of users were then compared to non-users. An F-test was used to discern if a statistically significant difference exists between the user and non-user groups. The result of this test indicated no significant difference in profitability existed between automated teller machine users and non-users. Thus, the fifth hypothesis must be rejected.

CHAPTER V

SUMMARY AND CONCLUSIONS

This dissertation has sought to add insights to the existing body of knowledge concerning consumers' consumption of retail banking services and to appraise a theoretically more consistent approach to segmenting retail bank markets. In achieving these aims, the relationships among an individual's life style profile, demographic profile, automated teller machine usage and his profitability as a bank customer were examined.

Conceptually, markets are viewed as combinations of different consumer types, each of which purchases differently from the other. Ideally then, segmentation involves a process of subdividing a market into these homogeneous types where each type conceivably may be selected as a market target to be reached with a distinct market mix. The theoretically more consistent course would be first to divide the market into groups based on their descriptive characteristics and then to search for behavioral differences among these groups. The more commonly used procedure reverses this process. First, behavioral differences are found. Then, divisions are made based on these differences. Wells (10) has indicated that the artificial grouping produced by this procedure could account for some of the disappointing segmentation results.

The objectives of this study, then, have been to:

1. compare two approaches for segmenting the market for retail bank services, demographics and life styles;
2. evaluate whether segments based on life style measures are useful in predicting usage of automated teller equipment;
3. evaluate the marginal value of adding life style measures to demographic measures as a means of predicting the likli-hood of an individual using an automated teller machine;
4. determine if users of automated teller machines differ in profitability to the bank as customers from non-users;
5. determine if differences in life style, demographics, or profitability exist between users and non-users of automated tellers and the nature of these differences; and
6. determine if these differences appear to be consistent across the mix of retail bank services.

In meeting these objectives, a better understanding was achieved of the usefulness of life styles as a base for segmenting the market for retail banking services. The value of life styles as a predictor of behavior, relative to demographic measures, was also determined along with a documentation of the differences between users and non-users of automated tellers. Finally, this study compared the life style differences discerned to those observed in other studies of retail bank services. Each of these findings adds incrementally to the stock of information about consumption processes and the tools used to measure them.

This study is subject to the normal limitations with regard to resources, the breadth of investigation, and uniqueness to a geographic area. These limitations do not restrain the results since it was more

the purpose of this effort to explore the feasibility of an approach to segmentation and to add some increment to the body of knowledge by describing consumers' consumption of banking services. Additional limitations imposed by the measurement instrument and analytical techniques are discussed in the final section of this paper which outlines future research directions.

Overview of the Study

The research methodology employed in this study represents an attempt to explore the relationships among an individual's life style, demographics, automated teller usage, and profitability as a bank customer, as well as to appraise the applicability of the life styles as a base on which to segment the market for automated tellers.

Five research hypotheses were drawn from the objectives: They are, in the order tested:

> Hypothesis One: Retail bank customers can be segmented into groups via life style analysis.
>
> Hypothesis Two: Statistically significant differences in automated teller machine usage, i.e., behavior, exist between members of different life style groups.
>
> Hypothesis Three: Individuals can be categorized as automated teller machine users or non-users using life style measures.
>
> Hypothesis Four: The combination of life style measures with demographic measures provides a statistically significant improvement in the ability to predict the likelihood of automated teller machine usage over demographic measures alone.
>
> Hypothesis Five: Persons belonging to life style groups which exhibit significantly (at the 0.05 level) higher automated teller machine usage also demonstrate significantly (at the 0.05 level) higher profitability to the bank as measured by the profitability index, constructed from the amounts the bank holds in time deposits, demand deposits and/or credit outstanding.

The data incorporated in the study came from two sources. A bank's records provided names, addresses and certain behavioral characteristics. Bank records on each individual sampled included: the three-month average daily balances in his demand, time, cash reserve and BankAmericard accounts. Descriptive characteristics were provided through personal interviews. Each individual's life style profile was measured using Well's (14) AIO Item Library. In addition, the interviewers collected demographic information.

Experimental Findings

To test the first hypothesis that retail bank customers can be segmented into groups using life style analysis, the life style measures were analyzed using R- and Q-factor analysis. The R-analysis reduced the one hundred original dimensions into fifteen. The dimensions, in order of importance were: (1) a staid, traditional, and pessimistic outlook on society, (2) youthfulness, gregariousness, and optimism, (3) innovativeness, (4) credit usage, (5) self-confidence, (6) adventurousness, (7) fashion and appearance consciousness, (8) concern over health, (9) satisfaction with life, (10) desire to travel, (11) settled and resistant to change, (12) home-ownership, (13) convenience orientation, (14) community spirit, and (15) cynical outlook on life.

The results of the R-analysis were inputed into a Q-analysis. A factor pattern of five groups produced the clearest results. Comparing life styles across groups yielded disappointing results. The differences between groups became most clear when groups comprised of a heavy proportion of users were compared to groups with a heavy proportion of non-users. Thus, retail bank customers can, in an academic sense, be segmented using

life styles. Whether these segments provide an opperationally sound segmentation base is addressed by the second hypothesis. To be of practical value, significant behavioral differences between life style groups are necessary. Hypothesis two tested this proposition using a chi-square test of the differences among the group's usage of automated tellers. Statistically significant differences in automated teller usage at the 0.05 level occurred among three of the groups. These results are consistent with those of hypothesis one. Retail bank customers can be segmented into groups using life style analysis, and a statistical difference in usage among three of the groups was observed. However, segments based on life styles did not produce usably distinct profiles in an operational sense. Forty percent of the segments showed no differences in automated teller usage between the groups.

The third hypothesis adds additional information by exploring the ability of life style measures to classify correctly automated teller users and non-users. A stepwise discriminant procedure was first used to determine the optimum combination of variables for classifying individuals by user status. The life style variables isolated by the discriminant procedure as the best predictors of usage include measures having to do with: finances and credit usage, status consciousness, the state of society, leisure activities, achievement orientation, travel, satisfaction with life, concern over health, and mobility. A linear discriminant function was then constructed using these measures. The null hypothesis that no difference in life styles exists between users and non-users was rejected at the 0.01 level. Thus, life style measures do serve, in a statistical sense, as good discriminators between users and non-users.

To avoid the problems associated with classical statistical hypothesis testing, a second test of hypothesis three was undertaken to determine the operational value of life style measures as predictors of automated teller usage. A proportional chance criterion which indicates the probability of an individual being correctly classified as a user by status, based on chance, was estimated to be 50 percent. The discriminant function built using the 14 life style variables, correctly classified automated teller users 92 percent of the time and non-users 72 percent of the time. Thus, hypothesis three, that individuals can be classified as automated teller users or non-users with life style measures, was accepted in both a statistical and an operational sense.

The fourth hypothesis measured the value of adding life styles to demographics in predicting the likelihood of automated teller usage. A log likelihood ratio test was used to compare a predictive model generated using demographics with one incorporating both life styles and demographics. Because the response variable (automated teller user status) in both models was binary, and distribution of estimators α and β was not normally distributed, a maximum likelihood estimator, logit, was applied. The null hypothesis, that no difference exists between the two predictive models, was rejected at the 0.005 level. Thus, life styles add significantly to the fit of the model predicting automated teller usage.

In an operational sense, the number of times a model is likely to predict correctly an individual's usage status is important. A 90 percent probability exists that 16 percent of the individuals tested would be correctly classified using the demographic model, while 84 percent of the individuals would be correctly classified by the model using both life style and demographic measures. Life style measures are clearly a

valuable addition in predicting whether an individual will use an automated teller machine.

The final hypothesis involves an effort to compare automated teller users and non-users in terms of their profitability to the bank as customers. A crude profitability index was constructed and then the mean profitability of both groups was compared. The test indicated that no statistically significant differences in profitability exist between bank customers who utilize automated tellers and those who do not .

Testing these five hypotheses accomplished four of the five objectives set out at the beginning of the study. The final objective was to determine if life style differences between users and non-users were consistent across different components of a bank's service mix. The objective was met by comparing the life style profile differences between users and non-users in Plummer's (13) study of bank cards to the life style profile differences between users and non-users of automated teller machines. Overall, the life style profiles are quite consistent. Statistically significant differences held in common by both groups included: a greater achievement orientation, a tendency to be more adventurous, more contemporary, more active, more fashion conscious, more mobile, and to hold more positive attitudes toward credit usage. Three discrepancies in the life style profiles of adopters were noted, however, concerning the adopters' status consciousness, community spirit, and convenience orientation. No negative relationships were observed, but automated teller users did not exhibit significant differences from non-users on measures of community spirit or desire for convenience as did Plummer's (13) bank card users. Plummer's study, on the other hand, did not demonstrate any higher propensity for status consciousness among bank card users, but

automated teller users did exhibit significantly more status consciousness than non-users. These differences might easily be justified by differences in time and geographic area. Plummer's (13) study was published in 1971 and his sampling frame was the Chicago area.

Implications from the Study

This research offers several implications for academicians and practitioners. The literature reviewed in Chapter II illustrated the position that life style measures are useful indicators of behavior and are also a useful base on which to segment markets. The results of this study fortify the view that life style measures aid in predicting behavior, but suggest that life styles are not an appropriate base on which to segment the market for retail bank services.

Life styles are generally considered good indicators of behavior. This work supports that perspective. It was demonstrated that an individual's status as an automated teller user or non-user can, in a statistical and operational sense, be predicted using life style measures. The value of life style measurement as a vehicle for understanding divergent consumption patterns among groups was also reaffirmed. Descriptive profiles were built by comparing users and non-users of automated teller machines on life style measures on which they differed significantly. These profiles differed along 15 dimensions, a total of 45 individual life style measures. A model constructed from a subset of the most discriminating life styles produced very good predictions of user status.

In the literature, life style measures have also been purported to be better predictors of behavior than demographic measures. This study also supports this contention. A model constructed incorporating life

style measures was a much more precise predictor of automated teller usage than an identical model using only demographic measures.

The tests of the usefulness of life style as a base on which to segment the market for automated tellers yielded mixed results. In an academic sense, individuals were grouped by descriptive life style characteristics but the behavioral differences of interest (automated teller usage) did not vary consistently enough among the groups to warrant adopting life style measures as a segmentation base. This does not indicate that life styles are not, or never will be, useful as a segmentation base for some bank products or services, just that life styles do not appear to be a viable base for segmenting bank markets for automated tellers in North Carolina at this time. This result should not be viewed as abasing the value of life styles for management decisions. The study has shown clearly that life styles do add considerable information useful to such strategic decisions as product positioning or advertising copy and media selection. Life style measures provided a much fuller profile of the individuals in a segment.

Finally, the life style profiles exhibited by adopters and non-adopters appear to be quite consistent across bank services. This finding adds to the attractiveness of life style measures as a tool for academic research and as a source of management information. Since collecting life style data is considerably more expensive than collecting demographic measures, the benefits of life style measures, relative to demographic measures, should be clear. This study demonstrated that life styles added significantly to the precision with which automated teller usage could be predicted. Given the observed consistency in life style profiles across retail bank services, the higher cost of collecting these data might at

least be absorbed by averaging the expense over several of the bank's service mix elements. Both of these results indicate the attractiveness of life style measurement to bank managers.

Further Research Directions

This work suggests several directions fruitful for further research. They may be classed into two general categories, (1) extensions enriching the approach followed in this study, and (2) issues unsettled in life style and, in some instances, of survey data in general.

The behavioral measure (automated teller usage), whether used as a dependent or an independent variable, was defined in terms of the average number of times an individual used a machine during the period of a month. The definition of usage might be disaggregated into the kinds of usage such as cash withdrawal, savings deposits, or loan payments. A variety of hypotheses could be generated postulating differences in the types of usage among various life style groups. The logit model incorporating life styles used to test hypothesis four could also be used to predict the probability of auotmated teller usage by an individual possessing various levels of the characteristics included in the model. Thus, the change in probability of usage could be estimated as the characteristics of an individual changed. For example, the probability of usage could be estimated for a variety of relationships such as: holding other factors constant, as a person's mobility increases, how does his likelihood of using an automated teller change?

Additional variables or measurement approaches might be examined to determine if the likelihood of correctly classifying individuals might be improved. Variables measuring the bank's image to the various groups

may be appropriate, especially when combined with perceptual maps. Other scaling devices could also improve results. Perhaps Rokeach's measures of values would prove helpful.

Finally, the analytical form might be changed from static to dynamic. Similar measures could be made at various points in time. Based on these measures, the stability of the segments could be evaluated as automated teller machines move through their product life cycle.

SELECTED BIBLIOGRAPHY

(1) Kotler, Philip. Marketing Management Analysis Planning and Control. 2nd Ed. Englewood Cliffs, N. J.: Prentice Hall, 1972.

(2) Cravens, David, Gerald Hills and Robert Woodruff. Marketing Decision Making: Concepts and Strategy. Homewood, Illinois: Richard D. Irwin, Inc., 1976.

(3) Wells, William. Life Styles and Psychographics. Chicago: American Marketing Association, 1974, pp. 3-4.

(4) National Science Foundation (RANN). The Consequences of Electronic Funds Transfer. Prepared by Arthur D. Little, Inc. Washington: U. S. Government Printing Office, 1975.

(5) The Oklahoma Bankers Association. Strategies for Electronic Funds Transfers. Mimeo. Cambridge, Mass.: Arthur D. Little, Inc., 1975.

(6) American Bankers Association. 1974 Payments System Policy Conference. Washington: American Bankers Association, 1975.

(7) The Southern California First National Bank. A Multi-Bank Study of Electronic Funds Transfer. San Diego: Booge, Allen and Hamilton, 1975.

(8) Zimmer, Linda Fenner. Cash Dispensers and Automated Tellers: Statistical Data and Analysis with Selected Case Histories. Park Ridge, N. J.: Linda Fenner Zimmer, Payment Services Correspondent, 1975.

(9) Lazersfeld, Paul F. "The Art of Asking Why." National Marketing Review, 1 (Summer, 1935), pp. 26-38.

(10) Wells, William. "Psychographics - A Critical Review." Journal of Marketing Research, Vol. XII (May, 1975), pp. 196-213.

(11) Mathews, H. Lee and John W. Slocum. "Social Class and Commercial Bank Credit Card Usage." Journal of Marketing, 33 (January, 1969), pp. 71-78.

(12) Mathews, H. Lee and John W. Slocum. "Social Class and Income as Indicators of Consumer Credit Behavior." Journal of Marketing, 34 (April, 1970), pp. 69-74.

(13) Plummer, Joseph T. "Life Style Patterns and Commercial Bank Credit Card Usage." Journal of Marketing, 35 (April, 1971), pp. 35-41.

(14) Wells, William. A.I.O. Item Library. Mimeo. Chicago: University of Chicago, 1974.

(15) Lazer, W. "Life Style Concepts and Marketing." American Marketing Association Proceedings (Winter, 1963), pp. 130-134.

(16) Moore, D. G. "Life Style in Mobile Suburbia." American Marketing Association Proceedings (Winter, 1963), pp. 151-163.

(17) Levy, S. J. "Symbolism and Life Style." American Marketing Association Proceedings (Winter, 1963), pp. 140-150.

(18) Good, Walter and Otto Suchsland. Consumer Life Styles and Their Relationship to Market Behavior Regarding Household Furniture. East Lansing, Michigan: Michigan State University Research Bulletin No. 26, 1970.

(19) Twedt, Dik Warren. "How Important to Marketing Strategy is the Heavy User?" Journal of Marketing (January, 1964), p. 72.

(20) Johnson, Richard M. "Market Segmentation: A Strategic Management Tool." Journal of Marketing Research (February, 1971), pp. 13-18.

(21) Tigert, Douglas J. "Psychometric Correlates of Opinion, Leadership and Innovation." (Working paper.) Chicago: University of Chicago, Graduate School of Business, undated.

(22) Wilson, Clark. "Homemaker Living Patterns and Marketplace Behavior--A Psychometric Approach." New Ideas for Successful Marketing. Eds. J. S. Wright and J. L. Goldstucker. Chicago: American Marketing Association, 1966, pp. 305-347.

(23) Wells, William and Douglas Tigert. "A Consumer Attitude Inventory." (Unpublished paper presented at the American Marketing Association meetings, Philadelphia, June, 1968.)

(24) Tigert, Douglas, Richard Lathrope and Michael Bleeg. "The Fast Food Franchise: Psychographic and Demographic Segmentation Analysis." Journal of Retailing, 47 (Spring, 1971), pp. 81-90.

(25) Bernay, Elayn. "Creative Advertising Through Life Style Analysis." Attitude Research Reaches New Heights. Eds. Charles King and Doublas Tigert. Chicago: American Marketing Association, 1971, pp. 189-195.

(26) Tigert, Doublas. "Psychographics: A Test-Retest Reliability Analysis." American Marketing Association Proceedings (Fall, 1969), pp. 310-315.

(27) Wells, William. "Backward Segmentation." Insights into Consumer Behavior. Ed. John Arndt. New York: Allyn and Bacon, 1968, pp. 85-100.

(28) Wells, William, Seymour Banks and Douglas Tigert. "Order in the Data." American Marketing Association Proceedings (Winter, 1967), pp. 263-266.

(29) Wells, William and George Gubar. "Life Cycle Concept in Marketing Research." Journal of Marketing Research, 3 (November, 1966), pp. 355-363.

(30) Wells, William and Douglas Tigert. "Activities, Interests and Opinions." Journal of Advertising Research, 11 (August, 1971), pp. 27-35.

(31) Nelson, Alan. "A National Study of Psychographics." (Unpublished paper presented at the American Marketing Associations, International Marketing Congress, Atlanta, June, 1969.

(32) Haley, Russell. "Benefit Segmentation: A Decision-Oriented Research Tool." Journal of Marketing, 32 (July, 1968), pp. 30-35.

(33) Heller, Harry. "Defining Target Markets by Their Attitude Profiles." Attitude Research on the Rocks. Eds. Lee Adler and Irving Crespi. Chicago: American Marketing Association, 1970, pp. 45-57.

(34) Bass, Frank, Edgar A. Pessemier and Douglas Tigert. "Complementary and Substitute Patterns of Purchasing and Use." Journal of Advertising Research, 9 (June, 1969), pp. 19-28.

(35) Pessemier, Edgar and Douglas Tigert. "Personality and Attitude Predictors of Consumer Behavior." American Marketing Association Proceedings (Summer, 1967), pp. 332-347.

(36) Wells, William. "Segmentation by Attitude Types." American Marketing Association Proceedings (Fall, 1968), pp. 124-126.

(37) Yankelovich, Daniel. "New Criteria for Market Segmentation." Harvard Business Review (March-April, 1964), pp. 83-90.

(38) Young, Shirley. "Psychographics Research and Marketing Relevance." Attitude Research Reaches New Heights. Eds. Charles King and Douglas Tigert. Chicago: American Marketing Association, 1971, pp. 220-222.

(39) Hustard, Thomas and Edgar Pessemier. "The Development and Application of Psychographic, Life Style and Associated Activity and Attitude Measures." Life Style and Psychographics. Ed. William Wells. Chicago: American Marketing Association, 1974, pp. 31-71.

(40) Plummer, Joseph. "Applications of Life Style Research to the Creation of Advertising Stretegies." Life Style and Psychographics. Ed. William Wells. Chicago: American Marketing Assocation, 1974, pp. 167-180.

(41) Wind, Yoram and Paul E. Green. "Some Conceptual, Measurement, and Analytical Problems in Life Style Research." Life Style and Psychographics. Ed. William Wells. Chicago: American Marketing Association, 1974, pp. 97-126.

(42) Wells, William. "Life Style and Psychographics: Definitions, Uses and Problems." Life Style and Psychographics. Ed. William Wells. Chicago: American Marketing Association, 1974, pp. 325-358.

(43) Wells, William and Douglas Tigert. "Activities, Interests and Opinions." (Working paper, September 1969.) Chicago: University of Chicago, Graduate School of Business, 1969.

(44) Evans, Franklin B. "Psychological and Objective Factors in the Prediction of Brand Choice: Ford versus Chevrolet." Journal of Business, 32 (October, 1959), pp. 340-369.

(45) Rokeach, Milton. "The Role of Values in Public opinion Research." Public Opinion Quarterly, 32 (Winter, 1968-1969), pp. 547-559.

(46) Rokeach, Milton. Beliefs, Attitudes, and Values. San Francisco: Jossey-Bass, Inc., 1968.

(47) Grubb, Edward and Gregg Happ. "Perception of Self, Generalized Stereotypes and Brand Selection." Journal of Marketing Research, 5 (February, 1968), pp. 58-63.

(48) Hughes, David and Jose Guarrero. "Automobile Self-Congruity Models Reexamined." Journal of Marketing Research, 8 (February, 1971), pp. 125-127.

(49) Ross, Ivan. "Self Concept and Brand Preference." The Journal of Business, 44 (January, 1971), pp. 38-50.

(50) Greeno, Daniel, Montrose Sommers and Jerome B. Keanan. "Percon-ality and Implicit Behavior Patterns." Journal of Marketing Research, 10 (February, 1973), pp. 63-69.

(51) Ziff, Ruth. "The Role of Psychographics in the Development of Advertising Strategy and Copy." Life Style and Psychographics. Ed. William Wells. Chicago: American Marketing Association, 1974, pp. 127-165.

(52) Demby, Emanuel. "Psychographics and From Whence it Came." Life Styles and Psychographics. Chicago: American Marketing Association, 1974, pp. 9-30.

(53) Lovell, M. R. C. "European Developments in Psychographics." Life Style and Psychographics. Ed. William Wells. Chicago: American Marketing Association, 1974, pp. 267-287.

(54) Tigert, Douglas. "A Research Project in Creative Advertising Through Life Style Analysis." Attitude Research Reaches New Heights. Eds. Charles King and Douglas Tigert. Chicago: American Marketing Association, 1971, pp. 223-227.

(55) Wells, William and Douglas Tigert. "Segmentation by Attitude Types." Marketing, the New Science of Planning. Ed. Robert C. King. Chicago: American Marketing Association December 1968, pp. 124-126.

(56) May, Eleanor G. "Psychographics in Department Store Imagery." (Working paper P-65.) Cambridge, Mass.: Marketing Science Institute, 1971.

(57) Reynolds, Fred D. and William Darden. "Intermarket Patronage: A Psychographic Study of Consumer Outshoppers." Journal of Marketing (October, 1972), pp. 50-54.

(58) Plummer, Joseph. "The Concept and Application of Life Style Segmentation." Journal of Marketing, 38 (January, 1974), pp. 33-37.

(59) Morrison, D. F. Multivariate Statistical Methods. New York: McGraw-Hill, 1967, pp. 152-153.

APPENDIXES

APPENDIX A

QUESTIONNAIRE COVER LETTER

NORTH CAROLINA STATE UNIVERSITY AT RALEIGH

SCHOOL OF AGRICULTURE AND LIFE SCIENCES
SCHOOL OF HUMANITIES AND SOCIAL SCIENCES

DEPARTMENT OF ECONOMICS AND BUSINESS
BOX 5368 ZIP 27607

May 19, 1977

Dear Respondent,

Good day! I want to thank you personally for being kind enough to fill out the attached questionnaire.

This study is one component in a series of banking studies being done under my auspices at North Carolina State University. Ultimately the goal of this work is to insure that banks here in North Carolina provide financial services in ways that fit your pattern of living. This, of course, will mean easier banking for you by insuring that the financial services you need are available where and when you want them.

This questionnaire will only take about 15 minutes to complete and we have a nice gift as a small way of thanking you for the information time. Your name has been selected completely at random. Any and all information that you supply will be kept in strictest confidence and used only for statistical purposes.

Finally, since our funds are extremely limited, it is of the utmost importance that each person we contact cooperate by filling out the attached questionnaire. It will only take a few minutes of your time. Would you help us help you?

Sincerely,

E. W. Leonard
Assistant Professor

P. S. Should you have any concerns about the confidentiality of this study or any other questions please feel free to call me. My phone number at the University is (919) 737-2607. Thank you.

EWL/gwl

Enclosure

APPENDIX B

QUESTIONNAIRE

QUESTIONNAIRE

SECTION 1 -- ACTIVITIES

First, we would like to ask you a series of questions concerning your activities. We would like to know how well the statements fit your normal activities.

After each statement, please respond by selecting one of the six categories indicated below. As you will note there are six responses. They range from:

1 I definitely disagree with the statement
2 I generally disagree with the statement
3 I moderately disagree with the statement
4 I moderately agree with the statement
5 I generally agree with the statement
6 I definitely agree with the statement

Please select the one which **best fits your situation.**

We are interested in your immediate reaction. Please do not contemplate your answer--just give the first reaction you have.

Statement	Definitely Disagree					Definitely Agree	
In my job I tell people what to do.	1	2	3	4	5	6	11AE
I buy many things with a charge or credit car.....	1	2	3	4	5	6	12AC
We will probably move once in the next five years.....	1	2	3	4	5	6	13AE
I like to pay cash for everything I buy.....	1	2	3	4	5	6	14AC
Television is a primary source of our entertainment.....	1	2	3	4	5	6	15AL
I enjoy going to club meetings.....	1	2	3	4	5	6	16AC
I like to think I'm a bit of a swinger.....	1	2	3	4	5	6	17AS
I often have a cocktail before dinner.....	1	2	3	4	5	6	18AL
I like ballet.....	1	2	3	4	5	6	19AL
When I must choose between the two, I usually dress for fashion, not comfort.....	1	2	3	4	5	6	20AC

Statement	Definitely Disagree					Definitely Agree	
I read one or more business magazines regularly.....	1	2	3	4	5	6	21AM
I am active in two or more service organizations.....	1	2	3	4	5	6	22AC
I do more things socially than most of my friends.....	1	2	3	4	5	6	23AL
I often serve wine with dinner.....	1	2	3	4	5	6	24AL
I buy at least three suits or outfits a year.....	1	2	3	4	5	6	25AC
I belong to one or more clubs.....	1	2	3	4	5	6	26AL
My friends or neighbors often come to me for advice	1	2	3	4	5	6	27AO
It is important to have a well-stocked first aid kit in the home.....	1	2	3	4	5	6	28AH
I would like to own and fly my own airplane.....	1	2	3	4	5	6	29AS
When I find a new brand I like, I usually tell my friends about it.	1	2	3	4	5	6	30AA
I often try new brands before my friends and neighbors do.....	1	2	3	4	5	6	31AB
I often shop at convenience stores.	1	2	3	4	5	6	32AC
I usually read Time, Newsweek or U. S. News & World Report every week.....	1	2	3	4	5	6	33AM
I enjoy going through an art gallery.....	1	2	3	4	5	6	34AE
In the last ten years we have lived in at least three different cities.....	1	2	3	4	5	6	35AM
I bought carry-out chicken in the past month.....	1	2	3	4	5	6	36AC
I had dinner in a restaurant in the past two weeks.....	1	2	3	4	5	6	37AL
I had a complete physical examination in the past year.....	1	2	3	4	5	6	38AH

Statement	Definitely Disagree					Definitely Agree	
I ate a meal in a drive-in restaurant in the past two weeks.....	1	2	3	4	5	6	39AA
I read a newspaper everyday.....	1	2	3	4	5	6	40AM
I have used a bank charge card.....	1	2	3	4	5	6	41AC
I bowl, play tennis, golf or other sports quite often.....	1	2	3	4	5	6	42AL
I buy many things with a credit card or charge card.....	1	2	3	4	5	6	43AC
When I see a new brand on the shelf, I often buy it just to see what it's like.....	1	2	3	4	5	6	44AB
An important part of my life and activities is dressing smartly...	1	2	3	4	5	6	45AC
I have helped to collect money for the Red Cross, United Fund or March of Dimes.....	1	2	3	4	5	6	46AC
I do a lot of shopping during the after Christmas sales.....	1	2	3	4	5	6	47AP
Our family travels quite a lot.....	1	2	3	4	5	6	48AL
I always watch at least one television news program daily.....	1	2	3	4	5	6	49AI
I exercise regularly.....	1	2	3	4	5	6	50AS
I like to work on community projects.	1	2	3	4	5	6	51AC
I like to watch or listen to baseball or football games.....	1	2	3	4	5	6	52AL
I do volunteer work for a hospital or service organization on a fairly regular basis.....	1	2	3	4	5	6	53AC
I shop a lot for "specials".....	1	2	3	4	5	6	54AP
I usually have one or more outfits that are of the very latest style.....	1	2	3	4	5	6	55AC
I like bowling.....	1	2	3	4	5	6	56AL

SECTION 2 -- INTERESTS

Thank you for helping us. We would now like to ask some questions about your interests. You should respond in the same manner as before. That is, select the statement which most closely indicates your initial reaction to the question.

1 I definitely disagree with the statement
2 I generally disagree with the statement
3 I moderately disagree with the statement
4 I moderately agree with the statement
5 I generally agree with the statement
6 I definitely agree with the statement

Statement	Definitely Disagree					Definitely Agree	
I would feel very unhappy if I could not keep up with the standard of living of my friends.....	1	2	3	4	5	6	11BU
I like to go shopping.....	1	2	3	4	5	6	12BS
I like to try new and different things.....	1	2	3	4	5	6	13BB
There are day people and there are night people; I am a day person.	1	2	3	4	5	6	14BS
I would like to have my boss' job.	1	2	3	4	5	6	15BE
When something begins to get a little old I want to replace it even when it's in good working order.....	1	2	3	4	5	6	16BS
I like to do things that are bright, gay and exciting.....	1	2	3	4	5	6	17BS
I would hate to live in a house without a lawn.....	1	2	3	4	5	6	18BS
If marijuana were legal, I would try it.....	1	2	3	4	5	6	19BU
The next car our family buys will probably be a foreign car.....	1	2	3	4	5	6	20BU
I believe in looking after my family and myself and letting others shift for themselves.....	1	2	3	4	5	6	21BU

Statement	Definitely Disagree					Definitely Agree	
I would rather live in or near a big city than in or near a big town.....	1	2	3	4	5	6	22BS
I take good care of my skin.....	1	2	3	4	5	6	23BH
I think we should adopt the four-day work week right now.....	1	2	3	4	5	6	24BL
I occasionally take a walk in the rain just for the experience.....	1	2	3	4	5	6	25BS
I never wear soiled or badly wrinkled clothes.....	1	2	3	4	5	6	26BC
On the job, security is more important than money.....	1	2	3	4	5	6	27BS
I like doing things which involve an element of danger.....	1	2	3	4	5	6	28BS
I find myself getting interested in, and proud of, the country or locality that my ancestors were from.....	1	2	3	4	5	6	29BS
Classical music is more interesting than popular music.....	1	2	3	4	5	6	30BS
New styles turn me on.....	1	2	3	4	5	6	31BC
I would like to take a trip around the world.....	1	2	3	4	5	6	32BL
If I had to choose between happiness and greatness, I'd choose greatness.....	1	2	3	4	5	6	33B
I am in favor of very strict enforcement of all laws.....	1	2	3	4	5	6	34BU
I usually look for the lowest possible prices when I shop.....	1	2	3	4	5	6	35BP
It is more important to live graciously than to save up a lot of money for the future.....	1	2	3	4	5	6	36BF
I am interested in politics.....	1	2	3	4	5	6	37BS

SECTION 3 -- OPINIONS

Thank you for sharing some of your interests with us. Next, we would like to ask your opinion on a number of areas. You can use the same manner of response as before. Select the statement which most closely indicates your initial reaction to the question.

1 I definitely disagree with the statement
2 I generally disagree with the statement
3 I moderately disagree with the statement
4 I moderately agree with the statement
5 I generally agree with the statement
6 I definitely agree with the statement

Statement	Definitely Disagree					Definitely Agree	
A woman's place is in the home.....	1	2	3	4	5	6	11CU
My greatest achievements are ahead of me.....	1	2	3	4	5	6	12CS
My job requires a lot of selling ability.....	1	2	3	4	5	6	13CE
Young people have too many privileges today.....	1	2	3	4	5	6	14CU
A party wouldn't be a party without liquor.....	1	2	3	4	5	6	15CL
A person has a right to break a law he feels is immoral.....	1	2	3	4	5	6	16CU
I am happier now than ever before..	1	2	3	4	5	6	17CS
I believe in taking direct action when I don't like something.....	1	2	3	4	5	6	18CS
I enjoy being in crowds.....	1	2	3	4	5	6	19CS
Before I buy a product, I often read the label very carefully.....	1	2	3	4	5	6	20CS
Pollution, regardless of present anxieties by some people, does not concern me.....	1	2	3	4	5	6	21CF
I expect our family will save more money in the next twelve months than we did in the last twelve months.....	1	2	3	4	5	6	22CF

Statement	Definitely Disagree					Definitely Agree	
I usually try to catch at least a glimpse of the setting sun.....	1	2	3	4	5	6	23CS
Things are changing too fast.....	1	2	3	4	5	6	24CS
The people who complain most about unemployment wouldn't take a job if you gave it to them.....	1	2	3	4	5	6	25CU
I like to work with my hands.....	1	2	3	4	5	6	26CS
I like to be considered a leader...	1	2	3	4	5	6	27CS
I would be willing to pay one dollar more each month for electricity if it meant cleaner air.....	1	2	3	4	5	6	28CU
I need help in planning for the future financially.....	1	2	3	4	5	6	29CF
When it comes to recreation, time is more a problem than money.....	1	2	3	4	5	6	30CL
Public schools do at least as good a job today as they did twenty years ago.....	1	2	3	4	5	6	31CU
I do not feel safe outside my house at night.....	1	2	3	4	5	6	32CU
It's hardly fair to bring a child into the world with the way things look for the future.....	1	2	3	4	5	6	33CO
Sloppy people feel terrible.....	1	2	3	4	5	6	34CS
I often wish for the good old days.	1	2	3	4	5	6	35CS
I am satisfied with life.....	1	2	3	4	5	6	36CS
I would like to take a lesson in my favorite outdoor sport.....	1	2	3	4	5	6	37CH
Our days seem to follow a definite routine such as eating meals at a regular time, etc.....	1	2	3	4	5	6	38CS
I think I have more self-confidence than most people.....	1	2	3	4	5	6	39CS
When I think of bad health I think of doctor bills.....	1	2	3	4	5	6	40C
I hate to lose at anything.....	1	2	3	4	5	6	41CS

Statement	Definitely Disagree					Definitely Agree	
I sometimes influence what my friends buy.....	1	2	3	4	5	6	42CO
Bank cards like BankAmericard or Master Charge make shopping easier	1	2	3	4	5	6	43CF
If I had my life to live over I would sure do things differently.	1	2	3	4	5	6	44CS
No matter how fast our income goes up we never seem to get ahead....	1	2	3	4	5	6	45CF
It is good to have charge accounts.	1	2	3	4	5	6	46CF
Every man should own a dinner jacket	1	2	3	4	5	6	47CS
Men should not do the dishes.....	1	2	3	4	5	6	48CU
I like to eat unusual dinners.....	1	2	3	4	5	6	49CS
Everyone should take walks, bicycle, garden or otherwise exercise several times a week.....	1	2	3	4	5	6	50C
Today most people don't have enough discipline.....	1	2	3	4	5	6	51CU
Generally I am willing to drive a little further and serve myself to save a few dollars.....	1	2	3	4	5	6	52CF
Bank cards make it too easy to get into debt.....	1	2	3	4	5	6	53CF
Consumer reports and similar publications are good sources of information about brands.....	1	2	3	4	5	6	54CI
I dread the future.....	1	2	3	4	5	6	55CS
I would rather go to a sporting event than a dance.....	1	2	3	4	5	6	56CL
I would rather spend money on a house than on a car.....	1	2	3	4	5	6	57CF
Automated tellers allow me to avoid hassels.....	1	2	3	4	5	6	58CF
I am more independent than most people.....	1	2	3	4	5	6	59CS
I like parties where there is lots of music and talk.....	1	2	3	4	5	6	60CL

Statement	Definitely Disagree					Definitely Agree	
I thoroughly enjoy conversations about sports.....	1	2	3	4	5	6	61CL
I like to go for long walks.....	1	2	3	4	5	6	62CS
To me health is the most important thing in the world.....	1	2	3	4	5	6	63CH
Automated teller machines make fewer errors than tellers.....	1	2	3	4	5	6	64CF
I wish I were younger than I am....	1	2	3	4	5	6	65CS
In this country, you have to shout to get what you deserve....	1	2	3	4	5	6	66CU
It is just a myth that hard work leads to success.....	1	2	3	4	5	6	67CU
I am a very neat person.....	1	2	3	4	5	6	68CS
Movies should be censored.....	1	2	3	4	5	6	69CU
Investing in the stock market is too risky for most families.....	1	2	3	4	5	6	70CF
Obedience and respect for authority are the most important virtues children can learn.....	1	2	3	4	5	6	71CU
I would never live next to someone of a different race.....	1	2	3	4	5	6	72CU
In my neighborhood, most people try to "keep up with the Jones'".....	1	2	3	4	5	6	73CU
If I had my way I would own a convertible.....	1	2	3	4	5	6	74CS
I think I have a lot of personal ability.....	1	2	3	4	5	6	75CS
Automated tellers are so difficult to operate their not worth the trouble.....	1	2	3	4	5	6	76CF
Machines like Automated Tellers are more efficient in carrying on routine banking transactions than using tellers.....	1	2	3	4	5	6	77CF
It is important to have face to face contact with my banker for routine transactions like deposits, withdrawals, or loan payments rather than to use a machine	1	2	3	4	5	6	78CF

Statement	Definitely Disagree					Definitely Agree	
It is important to me that the present methods of doing business with my bank do not change.....	1	2	3	4	5	6	79CF
I would rather live in an apartment or condominium than a house.....	1	2	3	4	5	6	80CL
I would use an Automated Teller much more frequently if it was closer to my residence.....	1	2	3	4	5	6	81CC
Now is a good time to buy a house..	1	2	3	4	5	6	82CF
I like to experiment with new and different things.....	1	2	3	4	5	6	83CS

SECTION 4 -- DEMOGRAPHIC

Thank you for being so kind as to help us. The information you have provided will allow bankers to better understand the way you live. This will help them adjust their service to better fit your banking needs.

The last bit of information we need is demographic. Please check the appropriate box for each question. Again, all the information contained in this questionnaire will be kept confidential. Finally, remember it is very important that every question is answered.

1. Sex (1)Male ( ) (2)Female ( )

2. Occupation (1)Professional ( )
(2)Technical ( )
(3)Manager, Administrator ( )
(4)Sales ( )
(5)Craftsman ( )
(6)Operator (operates machinery) ( )
(7)Laborer ( )
(8)Farm Worker
(9)Service Worker
(10)Student ( )

3. Do you rent or own your residence? (1)Rent ( ) (2)Own ( )

4. Where do you most frequently bank? (1)Near home ( ) (2)Near work ( )

5. If you are married, do both you and your spouse work? (1)Yes ( ) (2)No ( )
(If not married, leave blank.)

6. Education (1)Completed grade school ( )
(2)Completed high school ( )
(3)Some college ( )
(4)Completed college degree ( )
(5)Some graduate work ( )
(6)Completed a graduate degree ( )

7. Do you most often take care of your banking business when:
(1)grocery shopping ( )
(2)make a special trip ( )
(3)other shopping ( )
(4)going to or from work ( )
(5)sometime during the workday ( )
(6)you happen to be out ( )
(7)by mail ( )

8. Age (1)18-25 ( ) (2)26-35 ( ) (3)36-50 ( ) (4)50 or over ( )

9. Income (combined family income if married). (1)10,000 or less ( )
(2)10,001 to 15,000 ( )
(3)15,001 to 20,000 ( )
(4)20,001 to 25,000 ( )
(5)Over 25,000 ( )

10. When I think of Automated Teller Machines, I tend to think of them primarily as:

(1)a cash dispenser when the bank is closed ( )
(2)a cash dispenser whenever I need money ( )
(3)a facility to transact my routine banking transactions such as making deposits, withdrawing cash or making loan payments after regular banking hours ( )
(4)a facility to handle all my routine banking transactions anytime of the day or night. or night ( )

11. Which radio station do you listen to most of the time.

( ) WEZZ
( ) WGIV
( ) WBT
( ) Big WAYS
( ) WROQ
( ) WIST
( ) WAME

12. Please list the magazines which you subscribe or read on a regular basis.

_____ _____

_____ _____

_____ _____

_____ _____

13. Please check the TV programs listeb below which you watch regularly.

( ) Wide World of Sports
( ) Lawrence Welk
( ) Hee Haw
( ) Local Evening News
( ) Local National News
( ) WCT Tennis
( ) Good Morning America
( ) The Edge of Night
( ) As the World Turns
( ) Kojak
( ) Family
( ) Sanford and Son
( ) Bob Newhart
( ) Wrestling
( ) Rock Concert
( ) Oral Roberts or Rex Humbard
( ) Outdoors with Julie Boros
( ) 60 Minutes
( ) Today Show
( ) The Young and the Restless
( ) All My Children
( ) Laverne and Shirley
( ) Donny and Marie
( ) Programs on Public Broadcasting System

VITA

Edgar William Leonard

Candidate for the Degree of

Doctor of Philosophy

Thesis: LIFE STYLE MEASURES AND SEGMENTATION IN RETAIL BANKING: AN EMPIRICAL EXAMINATION APPLIED TO AUTOMATED TELLERS

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