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A STUDY OF CORRELATES OF BRAND  
LOYALTY IN THE TOOTHPASTE  
MARKET

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by

ESİN ATEŞ

B.A. in Business Administration, Boğaziçi University,  
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## A STUDY OF CORRELATES OF BRAND LOYALTY IN THE TOOTHPASTE MARKET

In this thesis, the brand loyalty in the Turkish toothpaste market was investigated. The basic purpose of the study was to find out the correlates of brand loyalty and to understand the factors that are related to product characteristics and consumers' characteristics in differentiating loyal people from the nonloyals.

In this analysis the toothpaste market is chosen since the product is accepted as being a high loyalty one, and use frequency is higher than some other products. Finally the Turkish toothpaste market has some special characteristics that can be accepted as a case for brand loyalty.

In order to analyze brand loyalty, 150 respondents including representatives of all socio-economic classes were chosen by quota sampling methods. Because of some control questions only 112 of these responses were used. As a result of a specific brand loyalty measurement being developed, 47 people were accepted as brand loyal. Then, the differentiating demographic and socio-economic characteristics of these people as compared with nonloyal people and the relating to toothpaste, were analyzed in detail. As a result, it was found that if all of these attributes were considered together in the form of a function, they differentiated the loyal people from the nonloyals. However, in analyzing them one by one only a few of them such as the importance given to whitening power of toothpaste and being translucent showed differences in loyal and nonloyal people. Together with this, when the demographic and socio-economic characteristics of respondents



were analyzed income and education level seemed to be differentiating characteristics for brand loyal and nonloyal consumers.

The study includes a summary of different concepts and measurement methods for brand loyalty, the literature review, and a field study which was conducted through a questionnaire. The interpretation of data was done through computer, and implications for marketers and academicians are presented.

## DİŞ MACUNU PAZARINDA MARKA BAĞIMLILIĞI İLE İLGİLİ FAKTÖRLER

Bu tezde, Türkiye dış macunu pazarındaki marka bağımlılığı konusu incelendi. Çalışmanın başlıca amacı bu alanda marka bağımlılığı ile ilgili olan faktörlerin ortaya çıkarılması, başka bir deyişle, ürün özellikleri ve tüketici özelliklerini oluşturan faktörlerin, bağımlılığı olan insanları olmayanlardan ayırma konusundaki etkinliklerinin incelenmesiydi.

Bu analizde özellikle dış macununun incelenecek olan ürün olarak seçilme nedeni, bu ürünün insanların yüksek derecede bağımlılık gösterdiği ürün kategorisinde kabul edilmesi ve kullanım sıklığının bazı başka ürünlere göre daha fazla olmasıdır. Ayrıca Türkiye dış macunu pazarı marka bağımlılığı için önemli olan bazı özelliklere sahiptir.

Marka bağımlılığını ölçebilmek için bütün sosyo-ekonomik sınıfların temsilcilerini içeren 150 kişi "quota sampling" methoduyla seçildi. Ancak anket formu içindeki bazı kontrol soruları nedeniyle çalışmada kullanılan anket sayısı 112'ye indi. Marka bağımlılığının ölçülebilmesi için özel bir ölçüm metodu geliştirildi ve sonuçta 47 kişi marka bağımlılığı olan kişiler olarak saptandı. Daha sonra bu kişilerin marka bağımlılığı olmayan kişilerle karşılaştırıldığında ayırıcı olan sosyo-ekonomik ve demografik özellikleri ve bir dış macununun alımında önemli olan faktörler konusundaki davranışları detaylı olarak incelendi. Sonuçta bu faktörlerin bir bütün olarak düşünülüp değerlendirilmesi halinde marka bağımlılığı olan insanları olmayanlardan ayırma konusunda başarılı olduğu bulundu. Ancak söz konusu değişkenler tek başlarına incelendik-

lerinde sadece birkaç tanesinin ayırıcı özelliği bulunduğu saptandı. Bunlar, kişilerin diş macununun beyazlatma gücüne ve şeffaflığına verdikleri önemdir. Aynı şekilde kişilerin demografik ve sosyo-ekonomik özelliklerinin incelenmesinde gelir seviyesi ve eğitim seviyesinin marka bağımlılığı olan ve olmayan kişileri ayırabildiği bulundu.

Bu çalışma marka bağımlılığı konusundaki çeşitli yaklaşımları, ölçüm metodlarını daha önceki çalışmaları içeren bir literatür çalışmasını ve bir anket formu ile yapılan saha çalışmasını içermektedir. Datanın değerlendirmesi bilgisayar yardımı ile yapılmıştır ve pazarlamacılara, akademisyenlere yönelik bazı önerilerde çalışmaya ilave edilmiştir.

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## CHAPTER I

### INTRODUCTION

While there is no consensus on the definition of the "brand loyalty" concept, for all practical purposes, it can be defined as the tendency of consumers to purchase a particular brand consistently. There are many studies on brand loyalty and numerous comments related to it. However, the definition of brand loyalty has been the subject of considerable confusion. Since the extent to which it exists depends on how it is defined and measured. A distinction is sometimes made between repeat purchase behaviour and brand loyalty. An important part of the literature has been established on that subject but there is not a clear definition separating them or giving clearly the relationships between them. Another important subject in brand loyalty is correlates of it. These mean the factors creating brand loyalty. These also show differences due to product class and characteristics of consumers. It is a fact that brand loyalty is a product-based phenomenon. It means people have different loyalty tendencies toward different products.

So far, very few studies have been conducted for investigation of brand loyalty and correlates of it in Turkey. The purpose of this study is to understand the brand loyalty phenomenon in the Turkish toothpaste market and basically to analyze the correlates of brand loyalty in terms of physical

product characteristics and the consumers' socio-economic characteristics. Toothpaste was chosen as the analyzed product because it is accepted in the high brand loyalty scale developed by researchers (Fortune, August 5, 1985). Also, the Turkish market has some typical characteristics for investigation of loyalty among toothpaste brands. For a time, there was only one brand on the market, and then suddenly striped toothpastes entered the market and created important changes in the market situation. Consumers, for the first time, were faced with alternative brands and high competition. Some people left their brand, but many people still use it continuously. These are the real loyal customers. In order to be successful in the market, marketing people should know the characteristics, needs and wants of this core group. That information will help them determine what they must do in the market.

Related with that purpose, the main hypothesis of the study is; there are differences between loyal and nonloyal people in toothpaste usage. The relevant subhypotheses are that differences exist between the loyal and nonloyal people in terms of attributes that are important in toothpaste buying. Also, there are differences between socio-economic characteristics of loyal and non-loyal people. The information is collected by personal interviews through self declaration of respondents' thoughts and ideas. This situation creates misinformation in the study. The best way in such a study is the observation method. This will reduce the mistake probability.

By taking into consideration the basic purposes of the study, the first part investigates different definitions and measurement methods for the brand loyalty concept. Also a brief review of previous studies on this topic is presented. It includes theoretical support and empirical background of

the study. In chapter three, the design and findings of an empirical study is presented. The final chapter includes conclusions and implications of the findings for marketers and academicians related to this topic.

## CHAPTER II

### THEORETICAL BACKGROUND OF THE STUDY

Before taking a closer look at brand loyalty in the Turkish toothpaste market, it could be useful to understand more fully what brand loyalty is. Considerably more work is needed before brand loyalty is understood. The second section states the correlates of brand loyalty. The third one is a review of the previous studies on brand loyalty and factors that are related to brand loyalty. The final section of the chapter discusses the parts of the previous studies and variables used in these studies that are also considered in this study.

#### 2.1. DIFFERENT CONCEPTUAL DEFINITIONS OF BRAND LOYALTY

It is a fact that there is not a unique definition of the term "brand loyalty", mainly because different aspects are emphasized in different studies. Also, there are some comprehensive comments that a conceptual framework for viewing brand loyalty has not been designed. In spite of these comments, this section presents some of the definitions accepted by main scholars.

According to Engel, Kollat and Blackwell (1968) the operational definitions of brand loyalty generally include:

- 1- brand choice sequences,
- 2- preferences overtime,
- 3- proportion of purchases and other measures, including on extended definition of brand loyalty based both on preferences and purchases.

- Brand choice preferences: It is the classification of households or consumers according to sequence of purchasing a specific brand. Basically, the following types of loyalties were defined.

- A. Undivided loyalty is a sequence of AAAAAA
- B. Divided loyalty is a sequence of ABABAB
- C. Unstable loyalty is a sequence of AAABBB
- D. No loyalty is a sequence of ABCDEF

- Preference over time: Sometimes loyalty has been defined as preference statements over time rather than actual purchase. More recent research on brand loyalty, however has favored definition that emphasize actual purchase described below.

- Proportion of purchases: The most frequently used definition of brand loyalty, at least in empirical research, is the proportion of total purchases within a given product category devoted to the most frequently purchased brand. This is used both as a conceptual definition of brand loyalty in several studies as well as on operational measure.

On the other hand, according to Jacoby and Kyner (1973) the definition of brand loyalty is expressed by a set of six necessary and collectively sufficient conditions. These are that brand loyalty is: 1- the biased - statement of preference or intention to buy; 2- behavioral response - purchase; 3- expressed over time - nor does a single biased

behavioral act constitute brand loyalty. The term "loyalty" implies a condition of some duration; and it is therefore necessary to have the purchase act occur at least at two different points in time; 4- by some decision making unit; 5- with respect to one or more alternative brands out of a set of such brands; 6- is a function of a psychological - decision making, evaluative-process. It reflects a purchase decision in which the various brands are psychologically compared and evaluated on certain criteria and the optimal brand is selected. Optimal is here defined in the sense of being most rewarding, all relevant decision criteria considered. Directing attention toward the set of salient decision criteria and away from the traditional preference measures emphasizes that the psychological processes underlying brand loyalty are more complex than might be assumed from simple "I like Brand X best" kinds of statements and requires accepting that brand loyalty involves something more than simple repeat purchasing behaviour. As a result of this decision making, evaluative process the individual develops a degree of commitment to the brands in question: he is "loyal". The notion of commitment provides an essential basis for distinguishing between brand loyalty and other forms of repeat purchasing and holds promise for assessing the relative degrees of brand loyalty. The six criteria presented here are considered necessary and collectively sufficient for defining brand loyalty.

Lipstein (1963) argues that studies that have a static nature as done up to that time, fails to give sufficient emphasis to the shifting character of consumer purchases and consumer behaviour. He suggests an analytical method which deals with the probability of shifts between brands and which therefore is more dynamic. According to that study the observable manifestations of consumer loyalty and disloyalty are the sequence of consumer purchases. We can deal with a single

consumer and his particular sequence of purchases. A probability tree is an elementary but useful way of looking at the sequence of purchases of a group of consumers. All of the brands in the market should be consisted in that form. In that way, it enables us to study the structure of the market in a unique way, a way that is more dynamic than we are accustomed to in the marketing research business. In that analysis, the average staying time with a brand was used as a more successful measure of loyalty.

Mc Connel (1968) states that brand loyalty or brand preference has most frequently been defined as the consumer's repeat purchase probability of a particular brand varying between 0 and 1. This definition overcomes any necessity to determine a criterion value. Also, he operationally defines brand loyalty as existing when a subject selected the same brand in four successive trials before any inducement to switch brands. After inducement to switch brands, brand loyalty was said to be re-established when one brand was selected in three successive trials.

In another study, Jacoby (1971) states that to exhibit brand loyalty implies repeat purchasing behaviour based on cognitive, affective-evaluative, and predispositional factors the classical primary components of an attitude. So stated, it is a short step to considering brand loyalty as having at least two primary facets: brand loyalty behaviour and brand loyal attitudes. Brand loyal behaviour is defined as the overt act of selective repeat purchasing based on evaluative psychological decision processes, while brand loyal attitudes are the underlying predispositions to behave in such a selective fashion. A final consideration is derived from the fact that brand loyalty is essentially a relational phenomenon. It describes preferential behaviour toward one or more alternatives out of a larger field containing competing alternatives.



In other words, brand loyalty serves an acceptance - rejection function. It may be said that individuals tend to organize the brands of a given product class into latitudes of acceptance, rejection and neutrality. The acceptance region includes both the most preferred brand as well as others that are also acceptable. It can be defined as "evoked set" of the consumer. The rejection region contains those brands considered most undesirable. The region of neutrality encompasses those brands which are regarded as neither acceptable nor rejectable - i.e., those brands to which the individual is noncommitted. In this way, Jacoby gives a definition to the multi-brand loyalty.

The basic considerations underlying development of the model were as follow:

- 1- General statements (i.e., definitions, models, theories) regarding brand loyalty must encompass multi-brand loyalty,
- 2- Brand loyalty is only one form of selective repeat purchasing behavior,
- 3- Brand loyalty has both behavioral and attitudinal components,
- 4- In addition to signifying intentional selection of certain brands, brand loyalty also implies rejection of competing brands.

According to Newman and Werbel (1973) repurchase is not a sufficient evidence of brand loyalty. It could best serve this function if it were based on three kinds of information: brand purchase behaviour, the amount of brand deliberation and attraction of the buyer to the brand. The inclusion of all three ingredients is very important for brand loyalty. Brand deliberation is seen as evidence of indecision and, therefore, receptivity to overtures of competing brands.

Repurchase of a brand without deliberation, however, does not necessarily mean brand loyalty. Instead it may be a function of product availability, desirable characteristics, or the retailer rather than the brand. Therefore, a measure of brand attraction is needed. The data available for analysis were collected more for the study of activity in the purchase decision process than for analysis of brand loyalty. They did not provide a basis for measuring brand attraction. However, they did permit estimates of brand deliberation. It was possible, therefore, to build a measure of brand loyalty based on both brand deliberation and brand repurchase and compare it with brand repurchase alone.

Miller and Granzin (1979) states that there are four major predictor constructs of brand loyalty. These are:

- 1- the product itself and the structure of its market
- 2- the buyers' information sources
- 3- the consumers' purchase patterns
- 4- the purchasers' personal characteristics

Here, they emerge as interrelated antecedents of behavioral loyalty. The paradigm also introduces benefits as a central cognitive influence on the loyalty formation process. The influence of benefits on loyalty is a focal point in this conceptualization. In the paradigm, product/market properties, personal characteristics and benefits help to determine the information sources used by the prospective buyer. Having gathered the necessary information, the buyer makes a decision and a resultant purchase. The repetition of this set of activities establishes a pattern of behaviour. To the extent this pattern is regular and habitual the buyer becomes loyal.

In the definition of brand loyalty used by Massy, Montgomery and Morrison (1970), a consumer is considered brand

loyal if his or her preferred brand during the first half of the period under study is the same as the one during the second half, preferred brand being defined as the one which is purchased most often in a given period.

Finally, Blattberg and Sen (1976) have extended the "proportion of purchases" approach to segments that are loyal to national or private brands as a category as well as specific brands within each of those categories. One segment of the population they found to be "high national brand loyal" and found that the proportion of purchases devoted to the favorite brand ranged from about 90 to 100 percent within this segment. Blattberg and Sen also used the concept of "last purchase loyal" to define a consumer who buys one brand on several successive occasions, switches to another brand, buys that several times, switches again and so on.

## 2.2. THE CORRELATES OF BRAND LOYALTY

Up to this time, several studies have been made to determine why brand loyalty varies across consumers and products. This section summarizes the consumer characteristics, shopping patterns and all other factors that are associated with degrees of brand loyalty.

Without going into detail, Engel, Kollat and Blackwell (1968) have summarized the major conclusions concerning correlates of brand loyalty drawn from the previous studies on that subject. These are:

- 1- Socio-economic, demographic and psychological variables generally do not distinguish brand loyal customers from other customers when traditional definitions of brand loyalty including only repeat purchase as a base for brand loyalty.

2- When the extended definitions of brand loyalty looking at brand loyalty as a preferential and behavioral response to one or more brand in product category are used, some socio-economic, demographic and psychological variables are related to loyalty. However, these relationships tend to be product specific.

3- There is limited evidence that loyalty behavior of an informal group leader affects the behaviour of other group members.

4- Store loyalty is commonly associated with brand loyalty. Moreover, store loyalty appears to be an intervening variable between certain consumer characteristics and brand loyalty. In other words, certain consumer characteristics are related to store loyalty which in turn is related to brand loyalty.

5- There is some evidence that brand loyalty is inversely related to the number of stores shopped.

6- The relationship between amount purchased and brand loyalty is uncertain due to contradictory findings.

7- The relationship between interpurchase time and brand loyalty is also uncertain due to contradictory findings.

8- There is limited evidence that perceived risk is positively related to brand loyalty.

9- Market structure variables, including the extensiveness of distribution and the market share of leading brand, exert a positive influence on brand loyalty.

10- The effects of the number of the alternative brands

special deals and price activity are uncertain due to contradictory findings.

It is a fact that many of the findings concerning brand loyalty correlates are contradictory since there is not much research on that subject. It is a new area to study.

In attempting to isolate correlates the evidence suggests that brand loyalty should be treated as a product specific rather than a general attribute. Many studies have demonstrated that correlates vary across products.

### 2.3. A SELECTED REVIEW OF PREVIOUS LITERATURE

The concept of brand loyalty has interested investigators for almost two decades and a sizable body of literature has evolved. In this section, conceptual and empirical studies on brand loyalty and correlates of loyalty are presented. These previous studies are accepted as basic constructs in the brand loyalty model presented in this ~~thesis~~ <sup>project</sup>.

One basic point of view of theoretical studies is the difference between repeat purchase behaviour and the brand loyal behaviour. Jacoby and Kyner (1973) have stated that regardless of which measure an investigator selects, a single unidimensional measure is probably insufficient for measuring such a complex multidimensional phenomenon as brand loyalty. Since it consists of both behavioral and attitudinal components, the notion of commitment provides an essential basis for distinguishing between brand loyalty and other forms of repeat purchasing behavior. The purpose of the study was subject to empirical testing six to nine years old children were used in an experiment as sample group, since they were candy purchasers. The experiment was conducted in three

phases. Phase I insured that a comparative evaluation of brands did occur and a more preferred and less preferred brands developed. Phase II attempted to generate repeat purchasing behavior under four different experimental conditions. Phase III. tested the hypothesized brand loyal vs. nonloyal differences using the dependent measures that are mentioned in 2.1 section of this chapter. Result of the study suggested that underlying dynamics of repeat purchasing behavior and brand loyalty are different so that failure to satisfy all 6 conditions (refer to previous section, p.5) for brand loyalty results in nonloyal behavior under circumstances which test for loyalty./

Also, a greater number of attractive alternatives in choice situation creates greater amounts of cognitive dissonance. In that case, it is reasonable that the consumer attempts to avoid risk and will adopt brand loyalty as purchasing strategy. In the study of Peter and Ryan (1976), perceived risk is conceptualized in terms of expected negative utility associated with product brand preference. Empirical evidence supports the notion that importance of loss is more useful as a segmentation variable than as a component in a multiplicative model. The findings also indicate probability of loss that may operate at the handled risk level and the importance of loss at the inherent risk level.

Similarly, Cohen and Houston (1972) have established a link between brand loyalty-commitment and dissonance theory. According to their theory, if a consumer has received as much satisfaction as he reasonably expected from a brand, brand switching offers little incentive other than the value of novelty itself. When the expected value of additional learning is low, the simplest and most gratifying course of action may be a positive reappraisal of one's decision. This refers to brand loyalty. They use toothpaste brands such as Crest and Colgate

in that study. Accordingly, it was hypothesized that brand loyal consumers of either Colgate or Crest would perceive greater differences in the degree to which each possessed desired attributes than would those loyal to other brands. The basic target was to examine the effect of brand loyalty upon the evaluation of existing product attributes. In order to realize that goal, personal interviews were conducted with a probability sample of approximately 200 people who were the usual purchasers of their household's toothpaste. Respondents were asked about frequency of use and the extent to which each brand possessed 5 salient product attributes or benefits. Then people were grouped by brand used and by scale rating of the importance of attributes. Also they formed a control group. As a result of that study, as predicted Colgate and Crest users perceived their own brand as superior in terms of decay cavity prevention, the attribute which all three groups had rated first in importance. A remarkably similar and consistent cognitive restructuring was evident for the other attributes too. It means with respect to magnitude of dissonance effects the control group found only trivial differences between Crest and Colgate in certain attributes. Those loyal to one or the other, however, saw rather substantial differences always in the direction that would justify their choices.

The possibility that individuals may be loyal to more than one brand in a product class has a longer history. The study of Jacoby (1971) is placed in this context. Taking some liberties and rephrasing formulations to suit a brand loyalty framework, it may be said that individuals tend to organize the brand of a given product class into regions of acceptance rejection and neutrality. Fifty-one housewives living in the greater Lafayette, Indiana area were interviewed regarding their perceptions and purchasing behaviour and attitude towards nine brands of prepared cake mixes available locally. Based on their responses, each housewife was placed into one of 3

groups: high quality difference perceivers, medium quality difference perceivers and low quality difference perceivers. As a result, since they buy the product, there are brands that are accepted. It is a basic support for presence of brand loyalty. Also brand loyalty is stronger if the distance between regions of acceptance and rejection and acceptance and neutrality is greater. Finally, brand loyalty will increase as the proportion of brands into rejection increases while the proportion of brands in the acceptance region decreases. /

Another important subject in brand loyalty is correlates of brand loyalty. Many recent empirical studies have investigated the correlation of a variety of characteristics of the housewife's behaviour in the market place as brand loyalty with her demographic, social, economic and psychological characteristics. For the most part, these studies have met with negative results. However the study of Carman (1970) introduces a new measure of brand loyalty and some positive results. He has tried to suggest a relationship between personal characteristics, the shopping process and loyalty by using a special purpose panel. The data for this study are from the Berkeley Food Panel, a panel on food purchasers by Berkeley housewives conducted for 15 weeks during 1966 by members of the Berkeley Marketing Faculty. The principle descriptive model and algorithm used in this study are derived from the binary branching model of Morgan-Sonquist Automatic Interaction Detector (AID) schema. As a result, the strongest correlation exists between loyalty and the mean number of stores visited per week. Other results are summarized as follows:

1- The single most important predictor of brand loyalty is store loyalty.



2- Consumers who are not shopping-prone will shop in a very small number of stores and within those stores will remain loyal to a very small number of brands rather than make careful choices between the values being offered by those stores.

3- Personal characteristics of consumers will explain differences in store loyalty.

4- Loyalty is positively correlated with the extent to which the housewife socializes with her neighbours.

5- The characteristics of consumers which are associated with brand loyalty differ between products. Here, the importance of various product' status is very effective.

Related the same subject Miller and Granzin's study (1979) aimed to provide an improved understanding of loyalty formation by reconceptualizing the process to add benefits as construct intervening between personal characteristics and loyalty. If benefits act as an intervening construct, then the direct relationship between demographics may not be significant but the benefit-loyalty and benefit-demographics relationships will be significant. For data collection, a consumer panel was drawn at random from the Columbus, Ohio population which furnished purchase data on their patronage of hamburger fast-food restaurants in five waves over a 12 week period. In evaluation of data canonical correlation was selected since analysis includes continuously scaled variables such as demographics, benefits and loyalty and it requires a technique capable of relating patterns of one variable set to patterns of another. As a conclusion, that study provides a methodological basis for more comprehensive approaches to benefit segmentation. In particular, benefit segmentation provides a significant and interpretable link to loyalty

segments for one retail industry, fast-food restaurants. The importance of benefits was magnified by finding they act as an intervening variable between one class of personal characteristics and brand loyalty.

Similarly, Mc Connel (1968) reports an attempt to identify two of the variables underlying brand loyalty development. His hypothesis was that the strength of brand loyalty is functionally dependent on subjective perceived quality of a brand and time. The strength of brand loyalty was measured by the number of cents premium required to switch a subject from this preferred brand to the brand he selected the least number of times. Time was defined as the number of selection trials the subjects had in which to develop a brand preference. Beer was used in that experiment because it is a consumer item with a relatively high frequency of purchase. As a sample a random probability sample of 60 beer drinkers was taken from Stanford University married students. Twenty-four trials were spaced into the 8 week period. After the 24<sup>th</sup> trial subjects were given a questionnaire to complete about the three beer brands. As a result, strength of brand loyalty was found to be significantly related to both time and perceived quality. It was evident that the offers of money on the least chosen brands induced subjects to switch brands but not always to the ones carrying the offer. It was also apparent that subjects generally retained to their preferred brand and then tended to remain loyal.

Relatedly, the study of Frank, Douglass and Polil (1968) consists of an analysis of the relationship between the brand loyalty exhibited toward a given product by a household and 1- the household's socioeconomic characteristics, 2- its total consumption of the product, 3- its store shopping habits, 4- its private brand proneness, 5- the percentage of the product purchased in small-sized containers and, 6- the

average price per unit. Seperate analysis was presented for each of the 44 different food products for 491 households. The results reported were based on a multiple regression analysis. As a result, 1- age of the youngest child tends to be negatively associated with brand loyalty, 2- building size tends to be positively associated with brand loyalty, 3- proportion of purchases in national food stores is negatively associated with brand loyalty, 4- average price is positively associated with brand loyalty and 5- proportion of purchases devoted to small package sizes is negatively associated with brand loyalty.

In a similar way, Elliot and Goodwin (1978) used 3 products (bread, softdrinks and green beans) to investigate the impact of consumer's age and formal education upon the brand loyalty. Products were chosen because of, 1- frequency of usage, 2- price per unit is low and 3- product categories have low cross-elasticity of demand. The results indicated that education level is inversely related to brand loyalty. There was no significant relationship between age and brand loyalty. An indirect finding was that more highly educated persons are more likely to switch brands in response to price reduction. Newman and Werbel's study (1973) reports on the incidence of brand loyalty for major household appliances under two different definitions of brand loyalty. These two measures imply repurchase is not sufficient evidence of brand loyalty. It would be best effective if it were based on three kinds of information: brand purchasing behaviour, the amount of brand deliberation and the attraction of buyer to the brand. The data available for the analysis were collected more for the study of activity in the purchase decision process than for analysis of brand loyalty. These provided estimates of brand deliberation. The data analyzed were from 249 households which had bought one of six types of major appliances in 1967. The respondents were adults from a prob-

ability sample of 1300 households in the US. Twenty percent of the households bought the same brand they had before. These are the loyals in terms of the repurchase definition. When both brand deliberation and brand purchase were considered, the percent of loyalty dropped to 19.3. As a result, positive relationships were found between brand loyalty and satisfaction with the old product and age of the household head and the presence of young children. Loyalty was negatively related with optimism about future business conditions and payment of more than a medium price. It varied irregularly with the age of the old appliance. The analysis supported the view that a measure of loyalty based on brand deliberation and brand repurchase is an improvement over repurchase alone.

Another important factor forming the brand loyalty is product quality itself, in other words physical benefits obtained from product. From a strategic standpoint, one should determine the extent to which customers are able to discriminate among different levels of quality for particular product lines. Customers use cues such as product characteristics, store image, brand names and prices to differentiate among products and to form impressions of their quality. Differences in perception lead to different in-store decisions and buying behaviour.

In Olson and Jacoby's study (1972) the cues used by consumers to judge quality were classified as either "intrinsic" or "extrinsic". Intrinsic cues are those product attributes which are intrinsic to the product in the sense that they cannot be changed or experimentally manipulated without also changing the physical characteristics of the product itself. Extrinsic cues are attributes which although product related are not a part of the physical product. Earlier quality perception studies have suggested that consumers' quality perceptions are strongly affected by extrinsic cues

such as price, brand name and retail store reputation and intrinsic elements such as taste and, smell have a negligible effect on quality perceptions. Then, Olson and Jacoby have stated that they believe intrinsic cues have more powerful effect upon quality judgements than do extrinsic cues. Actual differences in the intrinsic physical characteristics of products are viewed by most retailers as an important though not the only means of differentiating their offerings in the market place. These differences are thought to be interacted with other cues such as price to favorably affect buyer perceptions of quality.

Similarly, Wheatley, Chiu and Goldman (1968) tried to find the answers to the following questions in their study: Do customers really notice physical differences in the quality of merchandise? If they do, are there any limitation on their ability to discriminate among different quality levels? If purchasers notice differences in physical quality, how important is this in the process of forming overall impressions of product quality? Some differences in physical quality usually mean different prices. What is the role of different price levels in forming quality impressions? A convenience sample consisting of 171 females who had all purchased carpeting at least once interviewed in their homes in a large metropolitan area and ANOVA was used to analyze data. As a result, the effect of physical cues was, however concentrated between the low and medium levels while the effect of price cue was felt almost equally between low and medium and medium and high. No strong interaction effect was found to exist. The relationship between price and perceived quality was found to be linear. The relationship between the physical composition cue and perceived quality was nonlinear. What has been demonstrated in this study is that the price changes are easily perceived in a laboratory setting but changes in physical quality appear to be less easily perceived by customers than price changes.

## 2.4. AN OVERVIEW OF THE VARIABLES TAKEN FROM PREVIOUS STUDIES

In this study, all of these articles mentioned above were used as guidelines. Especially some of them were vary useful in designing the survey.

Table 1 below shows the variables in this study and the previous literature from which they were derived.

TABLE 1- Variables Studied

<u>Variable Name</u>	<u>Purpose of the Variable</u>	<u>Article</u>
Measurement of brand loyalty	To determine the loyal segment in the Turkish toothpaste market.	Different articles used in determination of brand loyalty
Physical and emotional benefits of the product in terms of correlates of brand loyalty	<p>To understand which physical and emotional benefits are effective in creating brand loyalty, basically</p> <ul style="list-style-type: none"><li>- taste</li><li>- smell</li><li>- foam</li><li>- whitening</li><li>- brightening</li><li>- freshness</li><li>- being strip</li><li>- being translucent</li><li>- external packaging</li><li>- preventing cavities</li><li>- availability</li><li>- price</li><li>- advertising</li><li>- preventing bad breath</li><li>- brand prestige</li><li>- preference by environment</li><li>- foreign orientation of the product</li><li>- producing firm</li><li>- selling place</li></ul> <p>were taken into consideration</p>	<p>J.Douglash, Mc Connel (1968), J. Paul Peter and Michael Ryan (1976), Olson and Jacoby (1972), John S.Y.Chiu and Arreh Goldmen (1968)</p>

Variable Name	Purpose of the Variable	Article
Importance of demographic variables in brand loyalty	To understand the effects of personal characteristics of consumers in brand loyalty and which of them are more important than the others in toothpaste market	J.M.Carman (1970), Ronald E.Frank, Susan F.Douglash, and Roland E. Polil (1968), Clifford Elliot, James C.Goodwin (1978), Joseph W. Newman and Richard A.Werbel (1973)
Relationship between brand loyalty and perceived risk	To search the influence of risk situation in brand loyalty phenomenon	Jacob Jacoby and J.C.Olson (1972), Joel Baumwoll (1985), Robert J. Hoover and Robert T.Green (1978), J.Paul Peter and Mirchael J.Ryan (1976)

As all of these previous studies and market experiences claimed that the concept of brand loyalty —the tendency to prefer and purchase more of one brand than the others— is one of the essential part of the market structure. Each of these studies, generally has developed a method for measuring brand loyalty by linking it with repeat purchasing. Then, they have searched the reasons behind the loyalty. Meanwhile they have tried to explain the brand loyalty procedure with some buyer behaviour concepts such as learning theory, perceived risk, cognitive dissonance and differences of personal characteristics.

By taking into consideration all of these previous studies, in order to understand the nature of brand loyalty, an empirical study on brand loyalty in toothpaste market was formulated. The study was directed to describing and measuring brand loyalty in the toothpaste market and searching the reasons behind the construct of brand loyalty, in other words, correlates of brand loyalty.

## CHAPTER III

### THE RESEARCH METHODOLOGY

#### 3.1. RESEARCH DESIGN

In the first part of this chapter main objectives of the study will be presented. Section two explains the research design. Third section includes the brand loyalty mode developed and the hypotheses that are analyzed. In the fourth section the sampling procedure is explained. The fifth gives detailed information about the survey instrument and whole data collection procedure, and finally the methods of analysis used in this study are presented.

##### 3.1.1. Research Objectives

In the light of all previous studies, it is a fact that brand loyalty is one of the most important dynamics of the market place and the maintenance of a high degree of loyalty is essential for the survival of most firms that concentrate on selling branded products. Yet, little is known about this important subject. Before deciding marketing strategies on a certain product group, segments of the whole market have to be identified. During that procedure one should take into account the brand loyal group since they are the basic consumers of that brand. For this reason, it should be the researchers concern to find these loyal people and



understand the reasons behind their loyalty in order to give better products and higher satisfaction.

Also researchers find that degrees of loyalty show differences according to product groups. J.Walter Thompson, the New York-based advertising agency gauged consumers' loyalty to brands in 80 product categories (Fortune August 5, 1985) Thompson measured the degree of loyalty by asking people whether they'd switch for a 50% discount. As a result of that study product groups are categorized as shown in Table 2.

TABLE 2- Degree of Loyalty According to Product Groups

<u>High Loyalty Products</u>	<u>Medium-Loyalty Products</u>	<u>Low-Loyalty Products</u>
Cigarettes	Cola Drinks	Paper Towels
Laxatives	Margarine	Crackers
Cold Remedies	Shampoo	Scouring Powder
55 mm film	Hand lotion	Plastic trash bags
Toothpaste	Furniture polish	Facial tissues

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Source: Fortune August 5, 1985.

In analysis of brand loyalty, to choose one of the high loyalty products helps to get more reasonable results. Due to J.Walter Thompson's study, toothpaste is among the high-loyalty products. Also, it is a consumer item used by whole family members with a relatively high frequency of purchase.

The Turkish toothpaste market has been living an interesting case until 1984. This market had a stagnant appearance for years. There was only Ipana which was a classic white toothpaste in the market till Grin, a gel type toothpaste, entered the market in 1975. However, that product was

not strong enough to effect the market position of Ipana. Then, in 1984 the first launch of red and white striped toothpastes has given a different dimension to the Turkish toothpaste market. Floran 2R and Signal have entered the market by following each other and have created high competition in the market. These have been concentrated marketing activities in all areas and some changes have just started to be seen with a rapid growth in the toothpaste market (Table 3). The continuing dominance of Ipana for years has just started to decline. There are still many Ipana loyal people who never try any other brands, inspite of all kinds of promotion and marketing activities. For that reason, the Turkish toothpaste market is worth studying for a brand loyalty case. In order to understand the dynamics of that market we have to find the loyal segment and the reasons behind their loyalty.

Briefly, the basic objective of this study is to understand and to measure the brand loyalty in the Turkish toothpaste market and to understand the factors that are important for brand loyalty phenomenon, in other words the correlates of brand loyalty in the toothpaste market.

TABLE 3- General View of Turkish Toothpaste Market

	1983	1984	1985
Total Market Volume (ton)	1310	1576	2000
Average unit (tube)	18.714.000	22.520.000	28.577.000
Yearly development in the market (%)	20.3	26.9	
Total Advertising Exp. (TL)	15.500.000	240.000.000	650.000.000
*Real Advertising Exp.	100	1020	1840
Nominal Adv. Exp. per unit	0.83	10.65	22.46

Source: "General View of Turkish Toothpaste Market Until 1983" February, 1986 by Eczacıbaşı İlaç San. Tic. A.Ş.

\*In order to find the real advertising expenditures, inflation was deflated by using the yearly price index 25.

### 3.1.2. Type of Research

The study conducted has the characteristics of descriptive type of research design since the purpose of this study is to obtain a complete understanding of the relevant variables in the situation of brand loyalty, and it presents a picture of relationships among the variables under study.

### 3.1.3. Models and Hypotheses

#### a) Measuring Brand Loyalty

A descriptive model was used in this study in measurement of brand loyalty. By taking into consideration all previous studies, it is right to say that repeat purchasing behavior and brand loyalty are closely related to each other. For that reason, it would be appropriate to start with an examination of repeat purchasing behaviour. Within that context, by considering some difficulties and limitations, the following model has been developed. First of all, loyalty has been investigated in three levels; high loyalty, medium loyalty, and nonloyalty. Respondents were asked the following three questions: "What is the toothpaste brand that you are using now?", "Which brand did you use one before?" and "which brand do you use continuously?" If a respondent gives the same brand in answer to all of these three questions, he or she was considered as highly brand loyal to that brand. If only two of these three brands the same, there was medium loyalty. Lastly, if answers to these 3 questions were different from each other, then the person was accepted as nonloyal in terms of toothpaste.

#### b) Hypotheses

The following hypotheses will be evaluated in terms of their significance.

$H_1$ : Whether or not there is a significant difference among the loyal customers to different brands in terms of importance given to the following attributes.

- a) taste of the toothpaste
- b) smell of the toothpaste
- c) foam of the toothpaste
- d) whitening power of the toothpaste
- e) brightening power of the toothpaste
- f) freshness of the toothpaste
- g) toothpaste being striped
- h) toothpaste being translucent
- i) external packaging of the toothpaste
- j) tube and the lid of the tube of the toothpaste
- k) power of preventing cavities
- l) availability
- m) price
- n) advertising activities
- o) power of preventing the bad breath
- p) brand prestige
- q) use by environment of consumer
- r) being foreign oriented
- s) producing firm
- t) selling place

$H_2$ : Whether or not there is a difference among the loyal customers to different brands in terms of the following demographic and socio-economic characteristics:

- a) age of the consumers
- b) sex
- c) income level
- d) education level
- e) owning a home
- f) owning a private car

- g) owning a video
- h) owning a music-set
- i) owning a home computer
- j) owning a refrigerator
- k) owning a washing-machine
- l) owning a color TV
- m) owning a wireless at home
- n) number of newspapers they read
- o) number of magazines they read

~~H<sub>3</sub>~~: Whether or not there is a difference among the loyal customers to different brands in terms of risk aversiveness.

H<sub>4</sub>: Whether or not there is a difference between loyal and nonloyal consumers in terms of importances given to the following attributes:

- a) taste of the toothpaste
- b) smell
- c) foam
- d) whitening power
- e) brightening power
- f) freshness
- g) being striped
- h) being translucent
- i) external packaging
- j) tube and the lid of the tube
- k) power of preventing cavities
- l) availability
- m) price
- (n) advertising
- o) power of preventing bad breath
- p) brand prestige
- q) being preferred by environment of consumer

- r) being foreign oriented
- s) producing firm
- t) selling place

H<sub>5</sub>: Whether or not there is a difference between loyal and nonloyal consumers in terms of the following demographic and socio-economic characteristics:

- a) age of the consumers
- b) sex
- c) income level
- d) education level
- e) owning a home
- f) owning a private car
- g) owning a video
- h) owning a music-set
- i) owning a home computer
- j) owning a refrigerator
- k) owning a washing mashine
- l) owning a color TV
- m) owning a wireless at home
- n) number of newspapers they read
- o) number of magazines they read

X H<sub>6</sub>: Whether or not there is a difference between loyal and nonloyal consumers in terms of risk aversiveness.

#### 3.1.4. Sampling Procedure

A probability sample of 112 people were chosen and interviewed as respondents. The sample had 68 females and 44 males. The unequality of sample in terms of sex occurred because of the shopping habits of people. In general, it means, females do the shopping and since the people who make the brand selection decision are interviewed as respondents,

female respondents are more than the male ones.

The sampling element was the person who decide the toothpaste brand in the household. Quota sampling was used as sampling method. Certain regions of Istanbul which represent different socio-economic stratas were selected; and by including representatives of all different stratas equally in the study, quotas were specified for these regions. By making all of these calculations, 150 were taken as the base sample size. However, at the end only 112 responses were used in the study because of some limitations. This non response created some deviations in the sampling plan which will be explained in detail in the limitations section.

The basic purpose of this sampling plan was to represent all social classes in the study. By considering this purpose, the following regions of Istanbul were included in the study.

TABLE 4- Regions From Which Sample Units Were Drawn

Regions	%
Nişantaşı, Levent, Etiler, Maçka, Bebek, Yeşilköy	18.8
Moda, Bagdat Street, Bostancı	32.1
Bakırköy, Bahçelievler, Merter	10.7
Beşiktaş, Taksim, Şişli	10.7
Kadıköy, Üsküdar	8.9
Pendik, Kartal, Maltepe, Küçükyalı	7.1
Fındıkzade, Beyazıd, Laleli	4.5
Bayrampaşa, Sarıyer, Kasımpaşa	6.3
Other	0.9

In table 5; the demographic characteristics of the respondents included in this study were summarized.

TABLE 5- Characteristics of Respondents

Ages of Respondents:	<u>Age</u>	<u>% of Respondents</u>
	≤20	4.5
	20-29	60.7
	30-39	20.5
	40-49	6.3
	50≤	<u>8.0</u>
		100.0
Sex of the Respondents:	<u>Sex</u>	<u>% of Respondents</u>
	Female	60.7
	Male	<u>39.3</u>
		100.0
Occupation of Respondents:	<u>Occupation</u>	<u>% of Respondents</u>
	Housewives ✓	11.6
	Officials	13.4
	Administrators	23.4
	Independent Business People	25.9
	Merchandisers	3.6
	Teachers	6.3
	Students	8.9
	Employees	3.6
	Retired people	<u>3.6</u>
		100.0
Income of the Respondents:	<u>Income</u>	<u>% of Respondents</u>
	≤100.000	13.7
	100.000 - 199.000	24.5
	200.000 - 299.000	29.0
	300.000≤	<u>32.8</u>
		100.0



Two respondents (1.8 % of total respondents) didnot declare their income level, and computer figures were adjusted due to 110 people who answered that question as respondents.

Education of the Respondents:	<u>Education</u>	<u>% of Respondents</u>
	Some primary school	0.9
	Primary school grad.	7.1
	High school grad.	11.6
	Lycee grad.	18.8
	University grad.	<u>61.6</u>
		100.0

As can be seen from Table 5, the respondents who answered the questionnaires are relatively young. 60.7% of them are between 20-29 age group. Also, in a larger sense 81.2% of respondents are between 20-39 age group. On the other hand, they are almost equally distributed in terms of income level: 32.8% of them have more than 300.000 TL 29% of them have between 200.000-299.000 TL, 24.5% of them have between 100.000-199.000, and only 13.4% of them have below 100.000 TL.

From an educational standpoint it can be said that respondents are highly educated: 61.6% of them have a university degree and 18.8% have a lycee degree. The occupation of respondents are various: 25.9% of them are independent business people including doctors, lawyers, dentists, architects: 23.2% of them are administrators including medium and high level managers and assistant managers: 13.4% of them are government and private sector officials: 11.6% of them are housewives; 8.9% of them are students; 6.3% of them are teachers; and 10.8% of them are employees, merchandisers and retired people.

On the other hand, 67% of the respondents have their own house, 51.8% of them have a car, 92% of them have a color TV; 42.9% of them have a video, 48.3% of them have a music set, 11.6% of them have a home computer and 3.6% of them have a wireless at home. Also almost all of them have a refrigerator and washing machine.

In addition, all of the respondents read one or more newspaper everyday and 58% of them read one or more weekly or monthly magazines.

So it can be said that these respondents are a highly educated group and belong to a relatively young to middle-age category and they can be defined as the members of middle to upper-middle class Turkish society.

#### 3.1.5. Data Collection Procedure and Survey Instrument

The data of the study were collected through questionnaires, and method of administration was personal interviews (See Appendix 1 for the questionnaire). This method of data collection was selected because of the greater degree of control over data gathering. Also the response rate is higher with personal interviews.

The first part of the questionnaire consisted of questions directed to measure brand loyalty. There were three questions in that part. The first one asked; what is the brand of toothpaste that you are using now? Second, what was the brand that you used before? the last one, What is the brand that you can say "I always use"? Also there was another question asking the evoked set of consumer about toothpaste. If the consumer had a much large set, it was difficult to talk about loyalty.

The second part consisted of two control questions, question #2 asked the frequency of brushing teeth. Any respondent who brushed his teeth more rarely than one time a day was excluded from the study, since he was not the real toothpaste user. Question #3 asked the family member who made the brand choice decision. Only the respondents who decide their brands by themselves was included in the study because the basic objective of the study was to find, the people who really decide on the toothpaste brand and have brand loyalty.

Question #4 asked whether the respondent tries any other brand rather than the one he generally uses, and if he does, why? Also question #5 asked the opinions of respondents on all toothpaste brands. That question helped in understanding the attitude of the respondent toward other brands rather than the brand he was loyal to, by giving optimist, neutral, and pessimist alternatives to them. Also, it was possible to measure multi-brand loyalty case with this data, but that phenomenon was not included in the study. That question was used as a control question for brand loyalty. If a respondent gave optimistic answers to more than one brand, he was accepted as a nonloyal person even if he gave the same answer to the first 3 questions since multi-brand loyalty case was not included in this study.

The next part of the questionnaire tried to find out the factors related to brand loyalty. Question #6 intended to understand the general tendency of respondents on the factors related to the brand loyalty phenomenon. Question #7 asked the importance scale of factors in toothpaste buying. Question #8 first asked the brand that the respondent was loyal to. Then, it intended to measure the successfulness of that brand in terms of these factors.

Question 9 measures the risk aversiveness of respondents.

Finally, the last part include questions on the demographic and socio-economic characteristics of respondents.

In this research, the basic way of collecting primary data was communicating with people with the help of an undisguised and structured questionnaire. The same questions were asked everyone in a determined form and in that way there was maximum control of the interviewer. Also the purpose of the study wasnot disguised, it was clearly indicated to all respondents. In preparation of questions and question forms, previous research that was conducted on toothpaste producer firms, some scientific publications and general observations of the writer were used. Also, these information sources and some statistical sources were used as secondary data in order to understand the basic structure of the Turkish toothpaste market.

As a result, 112 people were selected (68 females, 44 males) and used as respondents. They were given questionnaires by personal interviews.

### 3.1.6. Methods of Analysis

In this analysis, the SPSS program was used for analyzing the data. First of all, frequency analysis was conducted for each variable. Also, cross-tabulation was applied to understand the significant differences between the brands that respondents have loyalty to and the factors that are important for brand loyalty.

Furthermore, factor analysis showing the importance of factors for brand loyalty was applied. Semantic differential questions were used in that analysis. Also, in order to understand the factors differentiating brand loyal people from the nonloyals a multiple discriminant analysis was made.

Finally, in order to better analyze the differences between brand loyal and nonloyal consumers in terms of attributes related to toothpaste and the demographic and socio-economic characteristics of them, these variables should be analyzed individually as well. T-tests were used for this purpose.

TABLE 6- Types of Analysis Conducted

<u>Analysis Type</u>	<u>Question #</u>
Frequency analysis	Questions #1 to 25 (for all variables)
Cross tabulation	High loyalty by each variable
Factor analysis	Question #7
Discriminant analysis	Question #8
T-test	Question #8 Question #15 to 24 Question #9

Table 6 above summarizes the types of analyses utilized in the evaluation of each question asked in the questionnaire.

The next section will present the findings obtained.

### 3.2. THE RESEARCH FINDINGS

The initial step for the analysis was to observe the frequencies of all variables. The second step was to obtain the results related with importance levels of factors for brand loyalty, with a factor analysis. The third step stated the findings on hypotheses including a cross-tabulation analysis on differences of loyalty in terms of different brands, a discriminant analysis and t-tests for differentiating brand loyal people from the nonloyals.

### 3.2.1. The Summary of Findings on Variables Studied: Frequency Analysis

The frequencies of variables related with preference of toothpaste brand (now, one before and continuously) were evaluated as mentioned before, to measure the brand loyalty and new variables such as "high" referring to high loyalty and "medium" referring to medium loyalty were created.

Nearly 68% of the respondents brush their teeth two times a day; 30.4% of them one time a day and 1.8% of them one time in 2 days. The people who brush their teeth more rarely than this were extracted from the study.

Also, another control question showed that 60.7% of the people decide the toothpaste brand by themselves and 39.3% of them decide all together in the family. If the decision-making person was another one rather than the respondent filling out the questionnaire, he/she was not included in the study.

TABLE 7- Reasons for Trying Any Other Brand

	<u>Frequency</u>	<u>%</u>
Trying new brands on the market	48	56.4
Just for a change	18	21.2
Nonavailability of continiously used brand	10	11.8
Not any specific reason	2	2.4
By the influence of advertising	1	1.2
No answer	<u>6</u>	<u>7.0</u>
	85	100.0

According to the results, 75.9% of the people declared that they tried another brand instead of the one they used continuously. And, the remaining 24.1% of the people have never tried any other brand. When the reasons behind trying

any other brand are examined, it can be seen that 56.4% of them tried to test the new brands. 21.4% of them tried others just for a change and 11.8% of them for nonavailability of the continuously used brand.

On the other hand reasons of not trying any other brand are shown in Table 8. As can be seen, the major factor for not trying any other brand is because of being used to continuously-used brand.

TABLE 8- Reasons for not Trying Any Other Brand

	<u>Frequency</u>	<u>%</u>
Not necessitated since being pleased with the brand used	1	4.0
Being used to	19	76.0
No answer	<u>5</u>	<u>20.0</u>
	25	100.0

TABLE 9- The Opinions of Respondents on Different Brands (%)

	<u>I am Pleased and I Can Use It</u>	<u>Neutral</u>	<u>Don't Like It and I Don't Use It</u>	<u>No Answer</u>
Ipana	70.5	25.0	4.5	-
Floran 2R	33.9	39.3	5.4	21.4
Signal	40.2	26.8	4.5	28.6
Grin	6.3	28.6	21.4	43.8
Other domestic brand	1.8	3.6	1.8	92.9
Other foreign brand	18.8	2.7	.9	77.7

Table 9, shows the general evaluations of existing brands by respondents. These evaluations will be more meaningful with a cross-tab analysis made on demographic characteristics of respondents, contributing to this study. However, since such a brand based study wasnot included in this

analysis, Table 9 gives only general opinions of respondents on different brands. According to results, Ipana is the brand with which most of them are pleased with and Grin is the least preferred brand.

The major subject of that study is to search for the factors that are important in brand loyalty phenomenon. In this pursuit, the starting point is to understand the general brand loyalty tendency of respondents without specifying product group by asking the 3 major factors that are important for buying a brand continuously. As seen from the Table 10, the experience derived from the previous usage is the most important factor. It includes consumer satisfaction and product quality. A consumer buys a brand once again if he is satisfied with the previous usage. The second factor seems to be the availability of the brand. If a consumer doesnot find the brand whenever he needs it, he can buy another one. The third factor is the effect of advertising on consumers. In this way, the name of the product remains in their mind and whenever the need arises, the remembered brand is purchased. Another important factor seems to be the matching of expectations and product image in the respondents' mind with the brand. Also the belief about reducing risk by using the same brand continiously and the price of that brand are among the important factors. The details of this subject will be investigated in a later section.



TABLE 10- The Factors for Buying a Brand Continuously (%)

	<u>1<sup>st</sup> Factor</u>	<u>2<sup>nd</sup> Factor</u>	<u>3<sup>nd</sup> Factor</u>
1- The previous experience with the brand	68.8	8.9	6.3
2- Availability of brand	11.6	33.0	4.5
3- Price	3.6	13.4	16.1
4- The belief about reducing risk by using the same brand continuously	4.5	11.6	9.8
5- Loyalty to selling place	-	.9	
6- The influence of preference group and environment	.9	2.7	
7- The matching of performance expectations with the brand	9.8	17.9	
8- The personal chr. of respondent	.9	5.4	
9- The effect of advertising	-	2.7	
10- No answer	-	3.6	
	100.0	100.0	

As can be seen from Table 10, the risk factor seems to be one of the important indicators for brand loyalty. In order to understand this subject, risk tendency of respondents was investigated by asking the question "if a new toothpaste brand is launched on the market would you buy it or not?" As we see from Table 11, 27.7% of the people "buy it immediately". It shows that they are risk takers. The 51.8% who "may buy" are accepted as risk neutral. However, 6.3% of the people declared that "they donot buy it" which means they are risk averser. This information will be more meaningful when a t-test analysis between highly loyal people and nonloyal people in turns of their risk-taking position is referred to in a later part of the study.

TABLE 11- The Risk-Taking Position of Respondents

	<u>Frequency</u>	<u>%</u>
I generally buy and try it immediately	31	27.7
I may buy	58	51.8
I certainly donot buy	7	6.3
I donot know	16	<u>14.2</u>
		100.0

Another important subject is the information sources utilized for toothpaste brands. Table 12 shows the basic information sources of toothpaste brands. Advertising seems to be the most important information source. However, there is a contradiction between this result and the result about the reasons of trying any other brand shown in Table 7. According to that result only 1.2% of respondents buy any other brand by the influence of advertising. This situation occurred because of the tendency of respondents about rejecting the effect of advertising. The second important source is the advices of experts, and the third one is the advices of the reference group. However, 2<sup>nd</sup> and 3<sup>rd</sup> factors are in decreasing importance when compared with advertising. As a result, advertising can be accepted as the major source for informing people about toothpaste brands.

TABLE 12- Basic Information Sources of People for Toothpaste Brands (%)

	<u>1<sup>st</sup> Source</u>	<u>2<sup>nd</sup> Source</u>	<u>3<sup>rd</sup> Source</u>
Advertising	79.5	-	-
Magazine and brochures	1.8	11.6	-
Advice of experts	7.1	12.5	.9
Advice of reference group	2.7	8.9	2.7
Other	7.1	3.6	-
No answer	<u>1.8</u>	<u>63.4</u>	<u>96.4</u>
	100.0	100.0	100.0

### 3.2.2. Choice Criteria for Toothpaste Purchase: Factor Analysis

The purpose for conducting a factor analysis was to identify the "important" items of buying a brand continuously. Sixteen attributes were evaluated by respondents for their importance. Table 13 presents the results of factor analysis. In order to simplify interpretation of the table for the reader the 6 highest factor loaded variables are given for each factor.

The importance of 16 toothpaste attributes are explained by 6 factors. The total percentage variation that is explained by these 6 factors is 68.1%. By examining communalities, it is seen that these 6 factors best explain the variation in variables 12, 16, 8, 3.1 and 2. These variables are:

- 12. Power of preventing bad breath
- 16. Producing firm
- 8. Power of preventing the cavities
- 3. Foam
- 1. Taste
- 2. Smell

With these, there are some factors which have lowest communality since they cannot be loaded to only one factor. The main reason for that situation is, these factors are distributed to all factors equally. In that case, we can accept them as important as well. In that analysis, availability of the brand (9), price of the brand (10) and advertising made for the brand (11) are in that position.

An appropriate name for Factor 1, which explains 24.8 percent of variation in all 16 variables, would be "emotional items". Factor 2 which explains 11.5 percent of the variation

in all variables, would be named as "functional or operational attributes". Factor 3 explains 11.3 percent of variation in all variables would be named "integrated marketing functions". Factor 4 explains that 7.5 percent of variation in all variables would be named "intrinsic items" which are related to physical characteristics of the products itself, such as taste, smell etc. Factor 5 explains 6.7 percent of variation in all variables would be named as "extrinsic items" which while product related are not a part of the physical product such as price, brand name etc. Factor explains 6.3 percent of variation in all 16 variables would be named as a "combination of functional and intrinsic items".

Therefore, the six factors identified here explain importance of items for purchasing a toothpaste brand continuously by rated variables.

### 3.2.3. Findings on Hypotheses

After differentiating the loyal people by using the method mentioned in the previous sections, 47 people were accepted as highly brand loyal and 37 people as medium loyal. In analysis of attributes related to the product itself only the highly loyal group's responses were used since they represent the case better. As a result, in analysis of the hypotheses respondents were separated into two groups as highly loyals and nonloyals included with both medium loyals and nonloyals.

In this section, first the hypotheses related to the differences among the loyal customers different brands in terms of importances given to the attributes associated with the product and demographic and socio-economic characteristics of these loyal customers were investigated using a cross-tab analysis. Also, the analysis of differences among

TABLE 13- Factor Analysis on Choice Criteria for Toothpastes

<u>Buying Factors</u>	<u>Factor 1</u>	<u>Factor 2</u>	<u>Factor 3</u>	<u>Factor 4</u>	<u>Factor 5</u>	<u>Factor 6</u>	<u>Communalities</u>
1. Taste	-	-	-	.82068	-	-	.72349
2. Smell	-	-	-	.74098	-	.32659	.72151
3. Foam	-	-	-	-	-	.87272	.78395
4. Whitening power	-	.72198	-	-	-	.34462	.68803
5. Freshness	-	.15256	-	.52567	.59091	-	.67304
6. Being striped	-	-	.42960	-	.62378	-	.60432
7. External packaging	.23131	-	.38807	-	.67456	-	.68533
8. Preventing the cavities	-	.88225	-	-	-	-	.78761
9. Availability	-	-	.50532	.35986	-	.28290	.51485
10. Price	-	.13-48	.68668	-	.20336	-	.56097
11. Advertising	.21394	-	.71371	-	-	-	.58045
12. Preventing bad breath	-	.84703	-	.12883	-	.20239	.80143
13. Brand prestige	.71514	.14467	-	.22976	-	-	.71435
14. Used by near environment	.51960	-	.47583	-	.26647	.17040	.60217
15. Having foreign orientation	.64444	-	-	-	.43117	-	.66548
16. Producing firm	.88635	-	-	-	-	-	.79666
Eigenvalues	3.97143	1.83906	1.81374	1.20573	1.07363	1.00005	
% of variation	24.8	11.5	11.3	7.5	6.7	6.3	
Cumulative %	24.8	36.3	47.7	55.2	61.7	68.1	

the loyal consumers to different brands in terms of risk aversiveness was included in the study. Then, the differences between the loyal and nonloyal consumers in terms of importance given to attributes connected with the product and the demographic and socio-economic characteristics of them were analyzed by using discriminant analysis and t-tests. Finally, the analysis of differences between loyal and nonloyal consumers in terms of risk aversiveness was included in the t-test analysis.

a) Investigation of Loyalty to Different Brands In  
Terms of Product Attributes and Demographic and  
Socio-Economic Characteristics: Cross-Tab Analysis

In order to see the relationship between the attributes related to products and demographic and socio-economic characteristics of consumers with the brands that these consumers were loyal to, two different sets of cross-tab analyses were conducted. Table 14 shows the results of cross-tab analysis related to product attributes, and Table 15 shows the results related to socio-economic and demographic characteristics of consumers.

At the beginning of the study, basically 6 different brand which were popular in the market were selected as brand groups: İpana, Floran 2R, Signal, Grin, other domestic brands, and other foreign brands. Results of the study indicated that 35 of 47 highly loyal consumers were loyal to İpana, 6 of them were loyal to Floran 2R, 5 of them were loyal to Signal and only 1 of them was loyal to other domestic brands (Durodont).

TABLE 14- Differences in Loyalty to Different Brands in Terms of Importance Given to Product Attributes

<u>Relationships between loyalty to different brands and</u>	<u>Chi-square</u>	<u>df</u>	<u>α</u>	<u>cv/cc</u>
1. taste	3.16	3	.36	.26
2. smell	6.07	6	.42	.25
3. foam	18.35	12	.10	.36
4. whitening power	4.14	9	.90	.28
5. brightening power	4.43	12	.97	.18
6. freshness	2.02	6	.92	.15
7. being striped	13.07	9	.16	.47
8. being translucent	12.60	12	.40	.30
9. external packaging	6.38	12	.90	.21
10. tube and the lid of the tube	7.46	12	.82	.23
11. power of preventing cavities	1.56	9	.99	.18
12. availability	15.91	12	.19	.34
13. price	10.40	12	.58	.27
14. advertising	4.84	12	.96	.31
15. power of preventing bad breath	3.55	9	.94	.27
16. brand prestige	16.03	12	.19	.34
17. being preferred by consumer's environment	5.98	12	.92	.21
18. being foreign oriented	14.62	12	.26	.32
19. producing firm	8.56	12	.74	.25
20. selling place	10.34	12	.58	.27
21. risk aversiveness	16.02	9	.06	.34

As we see from Table 14, none of the relationships are statistically significant between attributes that are important in toothpaste buying and being loyal to different brands except the risk aversiveness. In the case of entering a new brand to the market, 20% of İpana loyals declared that they would certainly buy it while that ratio 33% in Floran 2R and 0% in others. Reversely, 25.6% of İpana loyals declared that they won't buy it while that ratio was 40% in Signal, 0% in Floran 2R, and 100% in other domestic brands.

TABLE 15- Differences in Loyalty to Different Brands in Terms of Demographic and Socio-Economic Characteristics

<u>Relationships Between Loyalty to Different Brands and Demographics</u>	<u>Chi-square</u>	<u>df</u>	<u>α</u>	<u>cv/cc</u>
1- age	4.83	12	.96	.19
2- sex	0.62	2	.80	.12
3- income	13.63	18	.75	.31
4- education	5.94	12	.92	.21
5- owning a home	1.35	3	.72	.17
6- owning a private car	6.16	6	.41	.26
7- owning a video	3.23	6	.78	.19
8- owning a home computer	8.43	3	.04	.42
9- owning a music set	3.64	6	.73	.20
10- owning a refrigerator	1.09	3	.78	.15
11- owning a washing mashine	.72	6	.99	.12
12- owning a color TV	5.67	6	.46	.32
13- owning a wireless at hom	3.92	3	.79	.22
14- numbers of newspapers read	31.27	9	.0002	.63
15- number of newspapers read	10.23	15	.81	.27

Similarly, as we see from the Table 15, none of the relationships are statistically significant between demographic and socio-economic characteristics of consumers and loyalty to different brands except the variables "owning a home computer" and "number of newspapers read". These vari-



ables also can be accepted as meaningless by considering the number of people having them. Only 3 respondents among the whole sample group have a home computer and only 4 of them read more than 2 newspaper everyday.

As a result, it is possible to say that demographic and socio-economic factors are not significant differentiators of loyalty to different brands.

b) Differentiating Brand Loyal and Nonloyal Respondents: Discriminant Analysis

In order to analyze whether or not there is significant difference between loyal and nonloyal consumers in terms of importances given to the product related attributes (refer to  $H_1$ ) within the studied sample, a discriminant analysis was conducted. Highly loyal respondents (47 of 112 people) were accepted as group 1 (loyal group) and medium and nonloyal respondents (65 of 112 people) were accepted as group 2 (non-loyal group).

The independent variables were chosen from questions asked to both groups of respondents. These variables were 1- taste of the toothpaste, 2- smell, 3- foam, 4- whitening power, 5- brightening power, 6- freshness, 7- being striped, 8- being translucent, 9- external packaging, 10- tube and lid of the tube, 11- power of preventing cavities, 12- availability, 13- price, 14- advertising, 15- preventing bad breath, 16- brand prestige, 17- preference of environment, 18- being foreign oriented, 19- producing firm, 20- the selling place.

The univariate analysis part of Table 16 shows that group means for independent variables are higher for the non-loyal group except for the "whitening power", "preventing cavities", "advertising" and "being foreign oriented" indicat-

ing that the loyal group gives less importance to these factors.

The multivariate analysis results in Table 16, show that Wilks' lambda for the total function is 74.16%. It represents the percentage of unexplained variation of the discriminant function. In other words, 25.84% of variation is explained by this discriminant function. The calculated F values are lower than the F table value. Therefore, it is concluded that the variables individually are not statistically significant in discriminating brand loyal consumers from the nonloyal group except the "whitening power" and "being translucent". However results of discriminant function showed that it was statistically significant in discriminating brand loyal consumers from the nonloyals, if those are considered wholly as a function (Discriminant Function Analysis of Table 16).

Also, the prediction results are tested with a proportion test. The result is that 75.89% of grouped cases were correctly classified, and this was significantly different from a proportion that would have been found by chance (see the detailed calculations in Appendix 2). These results showed that the function's discriminating power and classificatory ability was sufficient and statistically significant.

The discriminant function can also be interpreted by looking at the contribution of each of the variables after standardization for units. This gives information about the relative importance of variables in differentiation of loyals from nonloyals. According to the Standardized Discriminant Function Coefficients (Table 16), the importance sequence is as follows;

- 1- whitening power
- 2- advertising
- 3- brightening power
- 4- tube and the lid of the tube
- 5- being translucent
- 6- external packaging
- 7- being foreign oriented
- 8- being striped
- 9- foam
- 10- price
- 11- being preferred by consumer's environment
- 12- producing firm
- 13- brand prestige
- 14- taste
- 15- availability
- 16- freshness
- 17- selling place
- 18- smell
- 19- preventing bad breath
- 20- power of preventing cavities

In this analysis, only the product related attributes (referring to the first hypothesis of the study) were analyzed. Socio-economic and demographic characteristics of consumers (the second hypothesis of the study) were excluded from the discriminant analysis. This situation occurred depending on the results of the previous studies (see for detail "correlates of brand loyalty" section, p.11). Most of the studies made on these variables concluded with contradictory results. For this reason, instead of analyzing them wholly in a discriminant analysis, they were investigated individually by using t-tests in a later section.

TABLE 16- Results of Discriminant Analysis

I. UNIVARIATE ANALYSIS

Independent Variables

	Group Means		St. Deviation		F cal.
	Loyals	Nonloyals	Loyals	Nonloyals	
1. Taste	1.34	1.44	.48	.66	.86
2. Smell	1.42	1.63	.58	.72	.37
3. Foam	2.04	2.58	1.14	.95	.075
4. Whitening power	1.36	1.15	.64	.36	4.75*
5. Brightening power	1.36	1.38	.67	.52	.04
6. Freshness	1.32	1.49	.51	.77	1.80
7. Being striped	3.38	3.48	1.19	.90	.23
8. Being translucent	2.94	3.32	1.43	1.03	2.76*
9. External packaging	2.91	3.18	1.35	.88	1.64
10. Tube and the lid of the tube	2.68	2.68	1.35	1.15	.0004
11. Power of preventing cavities	1.32	1.90	.63	.51	1.23
12. Availability	1.72	1.89	.83	.75	1.25
13. Price	2.15	2.40	1.08	.86	1.85
14. Advertising	2.36	2.12	1.13	.82	1.69
15. Preventing bad breath	1.28	1.28	.61	.57	0
16. Brand prestige	2.38	2.46	1.31	.95	.14
17. Preference of environment	3.10	3.23	1.16	.93	.40
18. Being foreign oriented	3.30	3.13	1.20	.90	.66
19. Producing firm	2.64	2.68	1.34	.98	.03
20. Selling place	2.63	2.83	1.37	.99	.74

$F_{table}(20,91) = 2.11$  significant at .01

Scale values: 1 most important  
 2 somewhat important  
 3 somewhat unimportant  
 4 unimportant

## II. Discriminant Function Analysis

### Standardized Discriminant Function Coefficients

1. Taste	.18521
2. Smell	.05732
3. Foam	.35675
4. Whitening power	-.69966
5. Brightening power	.54539
6. Freshness	.14434
7. Being striped	-.35809
8. Being translucent	.43521
9. External packaging	.43132
10. Tube and lid of the tube	-.49764
11. Power of preventing cavities	-.03492
12. Availability	.14625
13. Price	.35350
14. Advertising	-.58227
15. Preventing bad breath	.05261
16. Brand prestige	-.29585
17. Preference of environments	.35293
18. Being foreign oriented	-.39147
19. Producing firm	.31849
20. Selling place	.09984

Canonical Correlation	= .5083
Wilks' Lambda	= .7416
Chi-square	= 29.824
Degrees of freedom	= 20
Significance	= .0716(it is statistically significant)

Group centroids	
Group 1 (Loyal)	= -.68795
Group 2 (Nonloyal)	= 4.9744
Percent of Correct Classification	= 75.89%

### Predicted Group Membership

1	2	
(74.5%) 35	(25.5%) 12	47
(23.1%) 15	(76.9%) 50	65
50	62	112

c) T-test Results

In order to get a better understanding on the differences between brand loyal and nonloyal consumers in terms of related with product, these attributes should be analyzed individually as well. In this analysis, it was assumed that demographic and socio-economic variables measured ordinally in the analysis part of the table 16 showed that both loyal and disloyal group agree on the importance of taste, smell, brightening power, freshness, power of preventing cavities, preventing bad breath and availability of the brand; but there is not a significant difference between means of loyal and nonloyal people.

Similarly both loyal and disloyal groups accept that toothpaste being foreign oriented, being preferred by on environment, external packaging, being translucent, and being striped toothpaste are not important in choosing any brand; but, again, there is not a significant difference between means of loyal and disloyal people.

The only difference is seen in whitening power of toothpaste. While loyal group accepts that this qualification is much more important; disloyal people says that it is neither important nor unimportant.

For other factors, all of the respondents generally think that those are neither important nor unimportant and there is not a significant difference between the means of loyal and disloyal groups.

Another hypothesis ( $H_2$ ) refers to the analysis of differences between loyal and nonloyal consumers in terms of demographics and socio-economic characteristics. According to results shown in Table 17, there was a significant difference between the means of loyal and disloyal consumers in terms of

income and education level of them. Loyal consumers generally concentrated on the middle income group while the disloyal group were coming from upper-middle and upper income groups. Also, in terms of education loyal consumers could be classified as having middle education level but the disloyal group has higher education level.

Similarly, in having a private car, music set and a wireless at home, there was a significant difference between means of loyal and disloyal consumers. In disloyal group, more of the people had these electronic items than the people in the loyal group.

Other demographic variables such as age, sex and occupation didnot differentiate the loyal consumers from the disloyals.

Finally, referring to  $H_3$  related to the difference between loyal and disloyal consumers in terms of risk aversiveness, the following results were obtained: Loyal consumers seemed to be more risk aversive while disloyal people seemed to be more risk lover. There was a significant difference between means of loyal and disloyal consumers in terms of this factor.

### 3.3. LIMITATIONS OF THE STUDY

The major limitation of the study is in the measurement of brand loyalty. When the literature of brand loyalty is investigated, it can be seen that many authors have made longitudinal analyses for measuring brand loyalty. It means they have followed the respondents at least 4 or 5 buying cases and then they formed a brand loyalty table for each buying. That kind of an analysis method, of course, gives more

TABLE 17- Differences Between Loyal and Nonloyal Consumers in Terms of Demographic and Socio-Economic Characteristics and Risk Aversiveness

Statements	Loyal		Disloyal		t - value
	$\bar{x}_L$	$s_L^2$	$\bar{x}_D$	$s_D^2$	
1. Age	2.62	.97	2.46	.99	.83
2. Sex	1.36	.49	1.42	.50	-.57
3. Occupation	3.85	2.23	3.94	2.00	-.22
4. Income	3.34	1.88	4.38	1.78	-2.99*
5. Education	4.04	1.08	4.54	.89	-2.66*
6. Home owning	1.32	.47	1.34	.48	-.21
7. Car owning	.49	.62	.80	.78	-2.27*
8. Refrigerator owning	1.06	.25	1.15	.36	-1.47
9. Washing mash. "	1.00	.21	1.03	.25	-.69
10. Color TV "	1.04	.51	1.12	.48	-.85
11. Video "	.81	.97	.83	.98	-.12
12. Music-set "	.72	.95	1.06	.98	-1.82*
13. Computer "	.13	.49	.29	.70	-1.38
14. Wireless "	0	0	.12	.48	-1.74*
15. #of newspaper read	1.49	.83	1.63	.84	-.88
16. #of magazines read	1.09	1.49	1.32	1.39	-.88
17. Risk aversiveness	2.33	1.03	1.76	.96	-2.31*

$t_{table} = 1.66$  for each criteria at  $\alpha=.10$



reliable and scientific approach to the subject but it is a more time consuming method. Five toothpaste purchases of a respondent approximately takes 6-7 months in Turkish conditions since toothpaste usage is quite low. For that reason, only an approximate way of measuring brand loyalty was used by asking respondents directly the brand that they are using now, the one before and the one they generally use, since people tend to forget only two previous buying cases were asked. Under these circumstances, this measure seemed to be the best one.

Another limitation related to the measurement method came from using the questionnaire method as survey instrument. In that method there is limited control of researchers on respondents, and it doesnot give a chance to differentiate real users from only buyers. The questionnaires were filled out by the people who buy the toothpaste, but it wasnot possible to measure completely whether these people were real decision makers for a brand or only buyers of it. Although there was a question in the questionnaire for measuring this dimension, the reliability of consumers was questionable. There was not any measurement for evaluating responses of them. For that reason, the only thing that the researcher could do was to accept their responses as true.

One other limitation of this study comes from the non-availability of literature on this subject in Turkey. Also, since toothpaste is a licenced product according to Turkish legislative structure, everything related to this product group is based upon the approval of the Ministry of Health. For that reason, toothpaste producing firms have hesitated to give detailed information about their products. Also the high competition in the toothpaste market was another reason of lack of information. However, inspite of that high competition, producing firms have never been directed to analyze the market structure exactly with the help of scientific studies.

For that reason the starting point of that study was only the articles written on brand loyalty but on different product groups in American society and the personal knowledge and investigation of the researcher on the toothpaste brands.

The final limitation comes from the sample used in the study. In determination of the sample basic purpose was including the representatives of all socio-economic classes. For this purpose, the certain regions of Istanbul representing certain socio-economic classes were chosen and quotas were determined for these regions. However, at the end of the research it was found that people were not distributed perfectly in terms of income and education level. It occurred basically because of the control questions excluding the respondents who do not determine the toothpaste brand by themselves and people who do not use toothpaste everyday regularly. At the end it is difficult to say that this sample group can represent all of the socio-economic classes perfectly. In general, this sample group seems to be concentrated on the upper-middle income group considering Turkish standards.

## CHAPTER IV

### CONCLUSIONS AND IMPLICATIONS

The final chapter of this study deals with the significant conclusions and some implications of findings in terms of content and methodology.

#### 4.1. CONCLUSIONS OF RESEARCH

The recent developments in the Turkish toothpaste market such as introduction of new type products, gels and striped ones, have created a different structure. And, measurement of brand loyalty seems to be one of the major constructs in understanding that new structure of the market. Together with it, the most important thing after measuring the loyalty is to analyze the factors differentiating brand loyals from the nonloyal. That will help to the toothpaste producing firms in better adopting to the current market conditions. This study was conducted to understand the brand loyalty case in the toothpaste market. In order to learn the differentiating factors for brand loyalty, a questionnaire including all the factors that can be considered in toothpaste buying was given to respondents, and several questions related with their toothpaste usage were asked. A brand loyalty measurement method was developed, and people were grouped as loyals and nonloyals according to this method. Then, the differences

between the answers of loyal people and nonloyal people were evaluated. In evaluation of this case, different methods were used, like frequency, cross-tabulation analysis, discriminant analysis, factor analysis and t-tests. In analysis of factors differentiating brand loyal consumers, 47 highly loyal people who were determined with the developed method of that study, were taken into consideration.

The definition of brand loyalty has been the subject of considerable confusion for years. But it is evident that there is a close relationship between repeat purchasing behaviour and loyalty. Even if, most of the research concluded that there was a difference between these concepts, repeat purchasing behaviour, may be accepted as the starting point of brand loyalty. Also, the answers given to the question related to factors for buying a brand continuously in general, has proves that fact. The experience coming from previous usage is the major factor for 68.8% of the people to buy a brand continuously. The second factor was the availability of the product. It is also related to repeat purchase activity.

By considering the basic hypothesis of this study, the factors that are important in purchasing a toothpaste brand were asked to the respondents and on importance scale for these factors were determined according to results of factor analysis. These results showed that the attitudes related to toothpaste purchase can be summarized in the following 6 factors.

1- "Emotional items" including brand prestige, being preferred by environment, producing firm etc.

2- "Functional and operational efficiencies" such as whitening power, power of preventing cavities, preventing bad breath, etc.

3- "Integrated marketing functions" such as availability price, advertising etc.

4- "Intrinsic items" such as taste, smell, freshness, etc.

5- "Extrinsic items" including being striped, packaging having foreign orientation etc.

6- "Combination of functional and intrinsic items".

When we analyze the respondents altogether without separating as to brand loyal or nonloyal, these factors were accepted as important in toothpaste buying.

The major reason of importance of emotional items come from the risk factor. Choosing phenomenon begins with the consumer's preference for a product on the basis of objective reasons —the taste or smell of the toothpaste is nice or it has a technical priority to the other brands— the brand name is the consumer's guarantee that he will get what he expects from the product. It includes also emotional rewards in it. The recent Coca Cola case is the basic example of that situation. People expect a certain taste from Coca Cola, then a change in that taste —inspite of positive research results on that new taste— has created a reaction from consumers (Fortune, August 5, 1985). Another point on the risk subject, simply many people are most comfortable in buying something that a lot of other people buy. All of these are on the emotional side of brand loyalty.

Similarly, in that study, results showed that the risk-taking situation is one of the basic differentiating item for loyal people. It means, while loyal people are more risk aversive, nonloyal people are more risk lover. According to Robert J. Hoover and Robert T. Green's Study (1978), the

concept related with perceived risk and purchase behaviour is based on the idea that consumer behaviour involves risk in the sense that any action of a consumer will produce consequences which he or she cannot anticipate with anything approximating certainty and some of which at least are likely to be unpleasant. Risk exists in the purchase situation in the sense that the consumer has "buying goals" associated with each purchase. If the consumer does not attain these goals, risk is involved in the purchase situation. Then, in order to reduce the risk situation they tend to use the same brand continuously without trying any other one.

Also, other factors play a complementary role to the emotional items. It means if a brand has a bad smell or taste the consumer will not buy it anymore. Similarly, if it is not found whenever consumer needs it, he will probably buy another brand or if there are price differences among the brands, consumers behave differently.

After all the analysis about factors related with brand loyalty, it was understood that all the functional and emotional factors that are important in toothpaste buying and demographic variables considered in that study were sufficient to differentiate the loyal people from the nonloyal; when those are considered as a whole in discriminant analysis. However, when we analyze all of these variables are by one, only a few of them can differentiate loyal people from nonloyal.

On the other hand, the variables considered in that analysis didnot differentiate the people who are loyal to different brands. It means those factors cannot differentiate Ipana loyal people from the Floran 2R loyals. Only two variables created a difference among, loyal people. These are "number of newspapers read "every day" and "owning a home computer". However, these income related factors do not seem

to be sufficient to explain and differentiate the loyalty to different brands.

The basic reason of this situation, may be, the recent status of the toothpaste market. For long times, there was only İpana, and it was placed in consumers' mind as "İpana-toothpaste". Then only after 1984 different toothpastes came on the market and people have had alternative brands including the important ones as well. These brands are very new as compared with İpana which was on the market since 1956. Up to 1984, there were some other brands such as Radyolin, Kolynos, etc; but these did not have any widespread distribution system including the whole of Turkey, neither did they have any advertising activity. Also, during these years the toothpaste market was much smaller as compared with the period which advertising activities started after 1984. As a result of all these considerations, we can say that people still do not have enough consciousness for choosing one of the brands among the alternatives. The toothpaste market is now only at the beginning of the growth stage. For that reason, it seems to be difficult to differentiate people who are really loyal to a brand from the nonloyal.

Although the attributes mentioned in this study did differentiate the loyal consumers from the nonloyal when they were studied altogether, another analysis was conducted to investigate these attitudes one by one in differentiating loyal from nonloyal. As a result of this analysis, only whitening power and being translucent of a toothpaste differentiated loyal from disloyal people. In whitening power, loyal people think that it is much more important while nonloyal accept it as neither important nor unimportant. Similarly, "in being translucent" nonloyal people said that it was certainly unimportant while loyal people took it as neither important nor unimportant.

Out of these variables, taste, foam, smell, freshness, brightening power, power of preventing cavities, and preventing bad breath were accepted as much more important by both groups. On the other hand, they accepted that being striped, and being foreign oriented were wholly unimportant.

Another important subject is demographic and socio-economic factors in differentiating loyal people from nonloyal. Numerous attempts have been made to determine why brand loyalty varies across consumers and products and different results have been attained in these studies. For example, the Advertising Research Foundation reported results based on toilet-tissue purchasing behaviour for 3206 members of the J.Walter Thompson Panell. As a result, they found no association between personality, socio-economic variables and household brand loyalty. On the other hand, by using the same data source but analyzing beer, coffee, and tea purchasing behaviour, Frank Massy and Lodahl (1975) observed a modest association between socio-economic, demographic and personality variables and brand loyalty (Fortune August 5, 1975). As a result, we can accept that brand loyalty, in general, is a product based phenomenon.

In this study, income, education and income indicator variables such as having a car, music set, and wireless differentiated loyal people from the nonloyals. According to the results, loyal people had a lower income and education and generally did not have expensive electronic equipment. All of these indicators proved that there was a negative correlation between socio-economic position and the loyalty level. People who have higher income and education tend to use alternative brands, because they can risk the amount they pay. They have the chance of being risk lovers.



#### 4.2. IMPLICATIONS

This research has some implications for marketers, advertisers and for the researchers related to the topic of brand loyalty situation in the Turkish toothpaste market.

From a marketing point of view, brand loyalty is one way of segmenting a market. Marketing programming to any of those segments is practical only if the consumers comprising these segments are identifiable. If brand loyal customers can be differentiated from the other customers in terms of attitudes, personality and socio-economic characteristics, amount purchased and the qualifications of the product that they like mostly, these findings may be applicable to marketing strategies. Also some marketers who want to introduce a new brand should know exactly the characteristics of loyal customers and what they want mostly from the product. From another point of view, the most preferred brand could emphasize the importance of the product attributes that has led consumers to become loyal to that brand. Marketers of other brands would probably be better advised to focus their efforts on different product attributes.

Similarly, by using the results of this study producing firms have the chance of reviewing the characteristics of their product and adopting the needs and wants of the consumers. Also, in determination of production quantities, the potential of loyal consumers can be accepted as a base or a starting point. Since, it is the fixed part of demand.

From the advertisers point of view, the results of the study showed that advertising was the basic information source for consumers about brands. That result gives an idea about the position of this sector in the Turkish market, and the importance of advertisements for influencing the

consumers' behaviour. Also, the results of factor analysis which show an importance scale for product attributes can give some important cues for advertisers. According to these results emotional items are the most important factors for consumers in buying a toothpaste brand. Then functional and operational attributes follow them. In preparation of an advertising campaign, taking these factors into consideration will probably help in obtaining successful results in influencing consumers.

By considering the special position of the Turkish toothpaste market, this analysis should be repeated, after 3 years. At that time, certainly more reliable and meaningful results will be attained. Because Turkish toothpaste market has just started to grow. Recently, there are only 3 major brands in the market, and consumers are not conscious enough because of an insufficient toothpaste usage habit and basically because of lack of education. However in a 2 or 3 year period most of the worldwide famous toothpaste brands such as Colgate, Crest, Aqua-fresh, Close-up and Blendax will be marketed in Turkey. During their launching period, certainly much more advertising activities will be carried out by them and also existing brands at present time should follow these activities in order to survive in the market. All of these activities will help the growth of the toothpaste market and it will reach the top of the growth stage. At that time, consumers will be more conscious in choosing one of these brands, and it will be much more meaningful to measure and to evaluate the brand loyalty case in the Turkish toothpaste market. In that way, it is possible to see the developments of the market from now to that time.

Furthermore, brand loyalty study may be done in another way. The model used in that study is very static and depends on personal interviews. Future research in that area needs to concentrate on more valid measures of brand loyalty

such as a longitudinal observation method including at least 5 purchase cases which may give more reliable results. Because in personal interviews, asking more than two buying occasions is meaningless; and in this case study suffers from oversimplification.

Perhaps, in the future it would seem useful to develop a typology of brand loyalty that focuses some attention on explaining the "why" of loyalty as against simply providing correlates of observed behavior.

Also, in this study the case of multibrand loyalty has not been investigated because of some technical limitations. However, the case of a consumer loyal to a group of brands is very factual in the market. A future study should include this extended definition of brand loyalty which explains the case more realistically than the traditional one dimensional brand loyalty.

Finally, this study gives a general approach to the brand loyalty case, not consisting of an analysis of specific brands in detail in terms of loyalty. However, in understanding the real position of the market, the attributes that are important for buying a specific toothpaste brand and the successfulness of that brand in terms of these attributes should be analyzed. Future research including these specific analyses can explain the market position of that product better.

## B I B L I O G R A P H Y

- Blattberg, Robert C. and Subrata, K. Sen. "Market Segments and Stochastic Brand Choice Model" Journal of Marketing Research, Vol.13 (Feb.1976) pp.34-45.
- Carman James, M., "Correlates of Brand Loyalty: Some Positive Results" Journal of Marketing Research, Vol.7 (Feb. 1970), pp.67-76.
- Cohen, B. Joel and Michael Houston, "Brand Loyalty - Commitment and Dissonance Theory", Journal of Marketing Research, Vol.3 (June 1972), pp.28-47.
- Ehrenberg, A.S.C. Repeat Buying, New York: North-Holland Publishing Company, 1972, pp.115-123.
- Elliot, Clifford and James C. Goodwin, "Brand Loyalty: A Further Examination" Business and Economic Review, Fall 1978, pp.24-27.
- Engel, J.F., Kollat, D.T. and R.O. Blackwell, Consumer Behaviour, New York: Holt, Rinehart and Winston, Inc., 1968, pp.440-475.
- Fisher, Anne, B., "Coke's Brand Loyalty Lesson", Fortune (August 5), 1985. pp.79-83.

- Frank, Ronald, E., Susan, P. Douglass and Rolando Pelil,  
"Household Correlates of Brand Loyalty for Grocery  
Products", The Journal of Business Vol.2 (May 1972),  
pp.73-79.
- Jacoby, Jacob, "A Model of Multi-Brand Loyalty" Journal of  
Marketing, Vol.11, Number 3 (June 1971), pp.23-26.
- Jacoby, Jacob and J.C.Olson, "Cue Utilization In the Quality  
Perception Process", Proceedings of the Third Annual  
Conference, Ann Arbor, Michigan Association for  
Consumer Research (1972), pp.162-179.
- Jacoby, Jacob and David B.Kyner, "Brand Loyalty vs Repeat  
Purchasing Behaviour" Journal of Marketing Research,  
Vol.X (Feb.1973), pp.1-9.
- Joel Baumwoll, "The Risk Factor in Brand Loyalty", Advertising  
Age, May 27, 1985. pp.58.
- Joseph W.Newman, On Knowing the Consumer, New York: John Wiley  
and Sons Inc., April 1967, 2.edition, pp.113-115.
- Hoover, Robert J. and Robert T.Green, "A Cross National Study  
of Perceived Risk" Journal of Marketing, V.42, 1978.  
pp.78-80.
- Lipstein, Benjamin, The Dynamics of Brand Loyalty and Brand  
Switching, New York: McGraw Hill Book Company, 1963,  
pp.276-289.
- May, E.Frederick, "The Effect of Social Class on Brand Loyalty"  
California Management Review (Fall 1971), pp.81-87.

- McConnel, Douglass, "The Development of Brand Loyalty: An Experimental Study" Journal of Marketing Research Vol.5 (Feb.1968). pp.43-47.
- Miller E.Kenneth, Kent L.Granzin "Simultaneous Loyalty and Benefit Segmentation of Retail Store Consumers" Journal of Retailing Vol.55 (Spring 1979) No.1 pp.47-60.
- Newman, Joseph W. and Richard A.Werbel "Multivariate Analysis of Brand Loyalty for Major Household Appliances" Journal of Advertising Research, Vol.X (Nov.1973), pp.404-405.
- Peter, D.Benneth and Harold H.Kassorjian, Consumer Behaviour, New Jersey: Prentice-Hall Inc. 1972. pp.113-120.
- Peter, J.Paul, Michael, J.Ryan, "An Investigation of Perceived Risk at the Brand Level", Journal of Marketing Research, Vol.8 (Nov.1976), 184-198.
- Wheatley, John L., John S.Y. Chiu and Arie Goldman, "Physical Quality, Price and Perceptions of Product Quality Implications for Retailers" Journal of Retailing Vol.57 No.2 (Summer 1981), pp.100-115.
- Witt, Robert, E., "Informal Social Group Influence as Consumer Brand Choice" Journal of Marketing Research Vol.6 (1969), 473-476.
- William, F.Massy, David B.Montgomery and Donald G.Morrison, Stochastic Models of Buying Behaviour, Cambridge; Mass: M.I.T. Press, 1970, p.119.

## APPENDIX 1. QUESTIONNAIRE

1. Şu anda kullandığınız diş macunu markası nedir? \_\_\_\_\_  
Bir önce kullandığınız diş macunu markası nedir? \_\_\_\_\_  
Sürekli kullandığınız diş macunu markası nedir? \_\_\_\_\_  
Şimdiye kadar kullandığınız diş macunu markalarını  
sıralayın \_\_\_\_\_

2. Dişlerinizi hangi sıklıkta fırçalıyorsunuz?

- ☐ Günde 2 defa  
☐ Günde 1 defa  
☐ 2 günde 1 defa  
☐ Haftada 1 defa  
☐ Daha seyrek  
☐ Hiç fırçalamıyorum

3. Satın alınacak markayı belirlemede aile fertlerinin rolü:

- ☐ Alınacak markaya ben karar veririm  
☐ Eşim karar verir  
☐ Çocuklar karar verir  
☐ Hep beraber karar veriz  
☐ Annem veya babam karar verir  
☐ Markaya önem vermeden herhangi birini alırız

4. Sürekli kullandığınız diş macununun yerine başka bir marka denediniz mi?

- ☐ Evet ☐ Hayır  
(Neden?) \_\_\_\_\_ (Neden?) \_\_\_\_\_

5. Aşağıdaki diş macunu markaları için beğeni derecenizi belirtin.

Beğeniyorum	Ne iyi	Beğenmiyorum
Kullanabilirim	Ne Kötü	Kullanmam

İpana

Floran 2R

Signal

Grin

Diğer yerli  
(Belirtiniz)

Diğer yabancı  
(Belirtiniz)

6. Aşağıda ürün grubunu düşünmeksizin, bir markayı sürekli almanızı sağlayabilecek faktörler gösterilmektedir. Sizce önemli olan 3 faktörü işaretleyip önem sırasına diziniz.

- ☐ Daha önceki kullanımlarla edinilen tecrübe
- ☐ Ürünün her yerde bulunabilirliği
- ☐ Ürünün fiyatı
- ☐ Sürekli aynı markayı kullanmanın ürün seçimindeki riziko ve belirsizlikleri azaltacağı inancı
- ☐ Belirli bir alışveriş yerine olan bağımlılık
- ☐ Kişinin içinde bulunduğu sosyal grupların ve çevresinin etkisi
- ☐ Ürün hakkında tüketicinin kafasındaki genel kanı ve beklentilerle markanın birleşmesi
- ☐ Kişinin karakter özellikleri
- ☐ Tanıtımın etkisi
- ☐ Diğer: \_\_\_\_\_



7. Diş macunu satın alırken aşağıdaki özelliklere verdiğiniz önemi belirtiniz.

	Çok Önemli	Oldukça Önemli	Oldukça Önemsiz	Önemli Değil
Tad	-	-	-	-
Koku	-	-	-	-
Köpük	-	-	-	-
Beyazlatma	-	-	-	-
Parlatma	-	-	-	-
Ferahlık	-	-	-	-
İki renkli oluşu	-	-	-	-
Şeffaf oluş	-	-	-	-
Diş kutu ambalajı	-	-	-	-
Tüp ve tüp başlığı	-	-	-	-
Diş çürüklerini önlemesi	-	-	-	-
Her yerde bulunabilmesi	-	-	-	-
Fiyat	-	-	-	-
Tanıtım	-	-	-	-
Ağız kokularını önlemesi	-	-	-	-
Ürünün marka prestiji	-	-	-	-
Yakın çevrenin kullanması	-	-	-	-
Yabancı kökenli ürün olması	-	-	-	-
Üreten firma	-	-	-	-
Satıldığı yer	-	-	-	-
Diğer	-	-	-	-

8. Marka bağımlılığınız olan diş macununu belirtin ve aşağıdaki özelliklere göre değerlendirin.

Marka: \_\_\_\_\_

	Çok Başarılı	Oldukça Başarılı	Oldukça Başarısız	Hic Önemli Değil
Tad	-	-	-	-
Koku	-	-	-	-
Köpük	-	-	-	-
Beyazlatma	-	-	-	-
Parlatma	-	-	-	-
Ferahlık	-	-	-	-
İki renkli oluşu	-	-	-	-
Şeffaf oluşu	-	-	-	-
Dış kutu ambalajı	-	-	-	-
Tüp ve tüp başlığı	-	-	-	-
Dış çürümelerini önlemesi	-	-	-	-
Heryerde bulunabilmesi	-	-	-	-
Fiyat	-	-	-	-
Tanıtım	-	-	-	-
Ağız kokularını önlemesi	-	-	-	-
Ürünün marka prestiji	-	-	-	-
Yakın çevrenin kullanması	-	-	-	-
Yabancı kökenli ürün olması	-	-	-	-
Üreten firma	-	-	-	-
Satıldığı yer	-	-	-	-
Diğer	-	-	-	-

9. Yeni bir diş macunu piyasaya çıksa, ne şekilde davranırsınız?

- ☐ Kesinlikle bir kez satın alır ve denerim
- ☐ Belki satın alırım
- ☐ Satın almam
- ☐ Bilmiyorum

10. Diş macunu markaları konusundaki başlıca bilgi kaynaklarınız aşağıdakilerden hangileridir?

- ☐ Reklamlar
- ☐ Dergi ve broşürler
- ☐ Uzman tavsiyesi
- ☐ Dost tavsiyesi
- ☐ Diğer

11. Diğ macununuz bittiğinde yenisini satın alırken, piyasada var olan diğer markalarla ilgili araştırma yapıyor musunuz?

☐ Evet

☐ Bazen

☐ Hayır

12. Yaş

☐ 20'den küçük

☐ 20-29

☐ 30-39

☐ 40-49

☐ 50+

13. Cinsiyet

☐ Kadın

☐ Erkek

14. Meslek \_\_\_\_\_

15. Ailede çalışan kişi sayısı \_\_\_\_\_

16. Ailenin toplam aylık geliri

☐ 100.000'den az

☐ 100.000 - 149.000

☐ 150.000 - 199.000

☐ 200.000 - 249.000

☐ 250.000 - 299.000

☐ 300.000 +

17. Öğrenim durumunuz

☐ Okur-yazar

☐ ilkokul

☐ Ortaokul

☐ Lise

☐ Üniversite

18. Oturduğunuz ev

☐ Kendinize ait

☐ Kiralık

19. Aşağıdakiler içinde sahip olduklarınızın markalarını belirtin.

- ☐ Otomobil \_\_\_\_\_
- ☐ Buzdolabı \_\_\_\_\_
- ☐ Çamaşır makinası \_\_\_\_\_
- ☐ Renkli TV \_\_\_\_\_
- ☐ Video \_\_\_\_\_
- ☐ Müzik Seti \_\_\_\_\_
- ☐ Elektrik süpürgesi \_\_\_\_\_
- ☐ Bilgisayar \_\_\_\_\_
- ☐ Telsiz \_\_\_\_\_

20. Hergün okuduğunuz gazeteler \_\_\_\_\_

21. Devamlı okuduğunuz dergiler \_\_\_\_\_

22. Oturduğunuz semt \_\_\_\_\_

## APPENDIX 2. TESTING OF PERCENT OF CORRECT CLASSIFICATION IN DISCRIMINANT ANALYSIS

$H_0 = P_{cc} = .01$  There is chance classification

$H_1 = P_{cc} = .01$   $P_{cc}$  is significantly higher than chance classification

	Predicted Group			
	Group 1	Group 2		
Group 1	35	12	47	(42%)
Group 2	15	50	65	(58%)
	50	62	112	

Percent of grouped cases correctly classified = 75.89%

$$\begin{aligned}
 C_{PRO} &= \alpha^2 + (1-\alpha)^2 \\
 &= (.42)^2 + (.58)^2 \\
 &= .512
 \end{aligned}$$

$$Z_{cal} = \frac{.7589 - .512}{\sqrt{(.512)(1-.512) / 112}} = 5.25$$

$$Z_{tab} = .01 = 3.08$$

$5.25 > 3.08$  Reject  $H_0$

This proves that  $P_{cc}$  is significantly higher than chance classification.