

# A factor analysis of identifying the customer behavior patterns: A case study in Tehran

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## Abstract

Studying shopping habit patterns of the customers is an area of interest among the marketing experts. Identifying these patterns provides suitable information for planning in relation to marketing, and identifying this profile could present useful information concerning the target group. Therefore, this piece of research seeks to identify the customers' shopping habit patterns and has been carried out by means of the survey method. The statistical population includes the customers in Tehran province from among whom 496 individuals were randomly selected (based on Cochran's formula) in observance of appropriate attribution. The research tools include a questionnaire, the validity of which was verified according to the views expressed by a group of lecturers at the Payame Nour University of Tehran. Then, in order to examine the reliability of the questionnaire, 30 copies were distributed to the customers as pre-test. The Cronbach's alpha ( $\alpha = 0.80$ ) suggested that the research tools is highly competent for data collection. Research findings indicated that the people's shopping habits in Tehran province may be summarized in 10 factors which totally demonstrate 56.31% of the customers' shopping habits in a factor pattern and 33 items based on the data. Finally, practical suggestions are put forward for planners.

**Keywords:** Customer Shopping Habit, Explorative Factor Analysis, Tehran Province

## Introduction

Researching into habits is important for the customer behavior as it is repetition of a central characteristic of the everyday life. Nearly 45% of people's behaviors recur almost every day and usually under the same conditions. Shopping and consumption are

similarly recurring. Customers are inclined to buy the same brand on various occasions of shopping, and buying the same in the same quantity at a retailer shop is meaningful in frequent references, and they eat similar types of food on different days. Moreover, understanding customers' repetitive behaviors is of significance for financial reasons and in brand terms. Increased recurring shopping and consumption are linked to the increased market share of a brand, customers' values during their lives, and their pockets' shares; thus, repetition, and in particular, habits could show characteristics of an important part of the customers' behaviors relating to the significant marketing consequences.

The investigations led to this result that no study has yet been conducted on the shopping habits of the Tehrani customers in Iran, while in many other countries such as South Korea, Japan, USA, the Czech Republic..., this issue has been discussed in detail the results of which have been presented to the merchants and tradesmen.

Conducting this study and clarification of the effective indices in shopping habits in Tehran and developing the model for the people's shopping habits in this city provides highly beneficial information to the present merchants and tradesmen or the individuals who are going to launch economic activities in the area of routine consumer products in Tehran so as not only to familiarize with these indices and understand the respective model but also to make their marketing strategies parallel to the customers' habits and tastes and apply such information in their more success and satisfy needs of their customers better.

Furthermore, there are some indices for shopping habits which have also been proved different in various nations and countries as suggested by the research carried out in other countries; therefore, specifying the effective indices vis-à-vis the Tehrani customers could also be an effective step toward

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forging an effective, goal-oriented relationship between the suppliers and customers.

### *Definitions of words*

*Habit:* Habits are a specific form of automatic behavior in which responses are directly stimulated by the environment or particular conditions (such as the place or previous actions); they are dominant, powerful behaviors quickly activated vis-à-vis the choice and their impacts on memory are gradually corrected. In the everyday life, the tendency to act habitually is combined with the routine needs and pressures such as shortage of time, distraction, and deficiency in self-control. Once forming, habits serve as a force maintaining the present circumstances and persuade repetition of the past behavior in shopping and future consumption; of course, the customers are free to act as they consider ideal and desirable and seek variation and varieties by avoiding their habits. Nevertheless, they are often frustrated in detaching from the past and doing something new.

At an individual level, a habit is the acquired preparedness for accepting a specific behavior and acting through repetition of the same acts. Habits warrant an attitude toward acting in a similar way and with special convenience and without direct intervention of will and common sense and awareness. Social habits refer to the acquired preparedness of the members of a society to exhibit similar behaviors in the long run. In general social patterns, the formal aspect of identical acts is described, and they turn to general social patterns in terms of their influence on everyday life. As a result, considering that habits are of two types, namely personal and social, and yet their instances are more remarkable at the individual level, limiting habits to the personal aspect, as believed by some authors, will be unacceptable.

*Customer's Shopping Habits:* Individually, a habit is the acquired preparedness to accept a specific behavior or doing something through repetition of the identical acts; in other words, shopping habits refer to the customers' behaviors vis-à-vis the type of selected product, time, repetition and manner of shopping or non-shopping of a product by the people.

Now, this question is raised that when it is possible for the customers to act on their own habits and when it is possible for them to act in a novel fashion. Since response activation is a particular habit in the quick memory and the effect of habit on memory changes slowly as new experiences occur, a cognitive, motivational attempt should be made to provide a non-habitual response. In order to act non-habitually, the customers have to decide to do something new and, in addition, overcome the readily available

habitual responses (lying in memory). Thus, habits unilaterally weaken the working memory and other cognitive resources. In view of the reference-oriented nature of decision-making and overcoming, the customers may act habitually when encountering pressures of the routine life, distraction, and regular depreciation decreasing the cognitive resources.

It has also been demonstrated in a field survey that the customers who were short of time successfully bought their intended items when placed at a similar shop, which in turn indicates reliance on habits. At similar shops, the customers comprehensibly relied on shopping habits of permanent items. Moreover, it potentially increased reliance on the useful habits when the people were shopping at a permanent supermarket.

### *How to form the customers' habits*

A. Gradual repetition of an experience may be effective in habit formation.

B. Reward and Habit Formation: When buying and using are rewarded, people become more willing to repeat it in the future. At initial stages of habit formation, more rewards lead to more output.

C. Behavioral Intentions in Habit Formation: The customers sometimes buy the products and services because they have intended to do so.

Marketing is studying the customers and consumers. Examining shopping habits and patterns of the customers provides suitable information to the marketers for finding the appropriate, profitable market. Using such information, the marketers can identify potential and actual customers of the organizational products, and gather helpful information and reduce the risk of organizational activities by understanding market opportunities for the organization's strategic planning.

As stated by Arnberg, "different habits of repetitive shopping follow regular patterns encompassing a wide range of brands, products, time periods and other conditions." Empirical evidences concerning repetition reveal the data identifying studies on periodical patterns in customers' shopping and consumption. Some evidences have also been provided in relation to the people's reports on repetitive shopping; for example, Batman and Zeiss found out that almost a quarter of the shopping done by the housewives at the supermarkets has been repetition of their previous choices. This tendency to repeat the previous shopping includes an extensive range of goods and services such as potato chips, bread, laundry powder, Catsup sauce, jeans, and restaurants.

## Review of literature

Some research has been carried out into the customers' shopping habits and their indices in different countries which ultimately suggested that the respective indices vary from country to country. In the article dealing with the factors influencing customer behavior when buying food, Stakovo, *et al* analyzed the shopping behavior of units of customers at the Czech food market and presented the factors which might considerably affect such behavior, e.g. price, brand, quality, product specifications, price fall, advertisements, innovation... and the results have been achieved in a survey carried out on a set of 1074 Czech families by the personnel at the Department of Marketing and Business, Berno University of Agriculture and Forestry in November and December 2006. The respondents were classified according to their annual incomes, places of residence, social group, age and educational background. The items focused on the hypotheses given the impacts of effective factors in people's decision-making when buying food, e.g. habitual food purchase, product properties and specifications, price, quality, brand, share price, packing, advertisements, others' advice and recommendations or inclination on testing new things. In the article entitled "Purchase and Consumption Habits", F. J. Mindy & Wendy Wood concluded that the university students like the population samples, who were inclined on about 45% of the behaviors they had listed in their every life, tend to act almost in the same way in similar situations. People can usually exercise regular control and act on their own will in contradiction to habit. Triandis predicts that people do not usually act as such. In the article dealing with the customer motivational shopping behavior at local malls, Seif, Kashef and Tirmizi (2008) investigated the relation between independent variables, including customers' shopping methods, interference in customer behavior, customer's shopping behaviors in the stage prior to decision-making and after decision-making with attitudinal, behavioral and motivational aspects of shopping. This study seeks to explore the relation between the variables involved by means of the responses provided by 165 respondents from the class with higher income rate in Rawalpindi and Islamabad. Major findings suggest an overall weak relation between the independent and dependent variables, but more precise analyses demonstrated that customer habits at the stage prior to decision-making is the only variable leading to a strong relation to the emotional shopping behavior. In Pakistan, there are four types of price index, namely customer price index (CPI), wholesale price index (WPI), price sensitivity index, and GNP modifier,

applied in inflation computation. Among these indices, the chief stress is laid on the customer price index (CPI) as a criterion for inflation measurement; therefore, one could show through this study that the purchasers shopping in Rawalpindi and Islamabad do the shopping with plan, have shopping styles relating to planned shopping in which the post-decision-making stage does not interfere. The pre-decision-making stage of shopping done by them relates to the emotional or unplanned shopping as well as their shopping habits as these days, the shops are full of varieties and the shoppers may easily become interested in shopping the products attracting them, while they buy the items set out in their planned list and the enjoyment principle plays a role here.

In another survey, Peter Kass, in an article entitled "Habits", speaks of the manner of data acquisition and customer shopping, investigating three stages of the customer's manner of decision-making, the impact of habits on manner of information acquisition, previous information and manner of shopping. Habits of the women with one child or the expecting women are assessed vis-à-vis the products special for the families with three children. The information achieved confirms most of the hypotheses of the theoretical model; and the resulting marketing concepts are discussed.

This article is also aimed at this issue, i.e. describing the differences between habitual shopping and non-habitual shopping, finally concluding that a relatively verified theory emerges in general which is particularly important in the process of information acquisition. Collecting customers' experience regarding shopping and habit formation reduces searching for their information and increases purchase of a specific product or brand.

In the article entitled "Customer's Habit of Shopping Farm Products in Florida", John Haydo deals with the customer's habit of shopping products, which was presented in Florida in 2002. The category of location/convenience is the key reason behind shopping from a particular supermarket. Other categories include price, quality, service and information. 579 surveys specified 23 places in the state which were largely lying in Orlando. Other selected information contains gender, age, level of education and annual income. Convenience/location is the most important reason for selecting the central garden shop on the customers' part. These customers were the people forming the farm centers of the chain stores and are looking for the best prices and focus on quality and service to a little degree.

In the article "Comparing Repetitive Shopping Habits of People in the USA and England", Godet-hearth and Serenbourg compare the shopping repetition

habits for the temporary genuine and original consumer products in the USA, reaching the result that repetitive shopping habit of a US citizen in 1951 and the English followed a similar pattern during the last 10-15 years.

## Research Methodology

This study is of practical nature in terms of aim and has been carried out with the correlation method. The statistical population comprises the customers in Tehran province, and according to the Cochran's formula and infinite size of the population, 496 individuals were randomly selected as the research sample. Research tools include a 33-item questionnaire, designed by means of the experts' views on the customers' shopping habits and Delphi technique. The designed tools were first administered as a pre-test to the outsiders, and once the questionnaire had been corrected, it was distributed and gathered. The content validity method was used to determine the questionnaire validity. In order to assess the item reliability, 30 questionnaires were completed and Chronbach's alpha coefficient was considered equal to 0.803, suggesting that the research tool is acceptable enough to be used in data collection. In order to find the underlying variables of a phenomenon or summarized set of data, the factor analysis method was adopted, and the dominating statistical technique was the explorative factor analysis. The initial data for the factor analysis are the variable matrix. The factor analysis has no predetermined dependent variables. In explorative cases, in which the goal is to sum up a set of data, an analysis of principal components is employed, in which total variance of the observed variables is analyzed. The correlation matrix for the measured variables has the primary diagonal, whereas in the common factor analysis, the level of intersection (common variance of the measured variable and concealed variable) lies in the primary diagonal of the correlation matrix. When the degree of intersection is close to one, results of all explorative methods will resemble those of the principal components. In analyzing principal components, contrary to the common factor analysis, components are estimated in such a way that they show the variance of the observed variables in the least dimensions, and principal components are in fact observed as the weighted total of the observed variables. In other words, in analyzing principal components, the observed variables are the origins of compound variables (components). The data matrix for the factor analysis should contain significant information. Significance of the information present in a matrix is determined through Barlett

chi-square test. Significance of chi-square statistic and Bartlett's test is the essential condition for the factor analysis. In Bartlett's test, the null hypothesis is that the variables are correlated with themselves only. Rejection of the null hypothesis indicates that the correlation matrix has significant information and the minimum necessary conditions for factor analysis exist. This test is also known as the sphericity test. Providing the correlation matrix from all variables in question is the first step in factor analysis. In providing the correlation matrix, the researcher should decide to put number 1 or another number in the primary diagonal of this matrix. This number, which is called intersection, represents the ratio of common variance between each variable and variable. The degree of intersection between 0 and 1 varies. Null intersection suggests that the common factors account for no change in any specific variable, and 1 intersection indicates that all changes in a particular variable is accounted for by the common factors. In other words, 1 intersection reveals that total variance of the observed variables undergoes factor analysis, while if the common variance of the observed variables and concealed variables (factors) undergoes factor analysis, an initial estimation of the intersection should be placed in the primary diagonal of the correlation matrix. A common method for estimating this intersection is computing the square of multiple correlations. Each variable is dependent from other dependent variables. This low limit of estimation provides the intersection. First, this estimation is put in the primary diagonal of the correlation matrix and the matrix undergoes factor analysis. Using the factor loadings provided, new intersections are computed again. If the difference between these intersections and the initial intersections is higher than the criterion amount (0.001), computation of the factors and their factors loadings is iterated through placement of the new intersections in the primary diagonal of the matrix. The intersections usually reach the criterion intersection in two or three iterations. SPSS – Version 21 is applied in data collection.

## Conclusion and Discussion

An investigation of the demographic information indicates that the highest frequency belongs to the people with bachelor's degrees forming 47.2% of the sample. The class of associate's holders the age group of 20 to 30 years, forming 40.7% of the participants in the study. Those over 60 years old, forming 2.6% of the sample, held the least class of frequency. Average age of the respondents was 35.01 years old with the standard

deviation of 11.2. 39.5% of the participants resided in northern Tehran, 20.25 in east, and 20.2% in west Tehran. 19.2%, equaling 95, of the research participants lived in south Tehran. 50.2% (equaling 249 subjects) of the sample in question are male and 49.8% (equaling 247 subjects), female. It is therefore clarified that both gender groups participated in the study almost equally. 239 participants, equaling 48.2%, choose the holidays for shopping, in terms of which the dominant population in the sample is variable. Shopping during the workdays represents 104 participants accounting for the least class in the sample.

As pointed out in the previous parts, after data collection, it is necessary to carry out the explorative factor analysis in order to extract and identify the factors. Thus, in this part, the 33 items gathered in analysis of the shopping habits of people in Tehran province and identification of its effective factors as EFA factors underwent variable refinement.

The factor analysis was employed to reduce the number of research variables to fewer factors and deter-

mine the share of effect of the factors. The computation carried out suggests that internal cohesion of the data is suitable and the sample size is considerable for expression of the correlation between the research variables ( $KMO=0.764$ ) as it is above 0.7. Bartlett's statistic was also significant at the level of  $p = 0.01$ , and the null hypothesis concerning the identical matrix is rejected, and the explorative factor analysis operations may therefore be fulfilled. According to Kaiser criteria, 10 factors with Eigen values higher than one were extracted. After the factor cycle with Verimaks method, the variables in question were grouped in ten factors. The Eigen value, which is indeed the total squares of the factor loadings of each factor, accounts for the variance explicated by that factor. This total variance value is the characteristic root or Eigen value of the factor, and the higher the special factor value, the higher variance the factor accounts for. Based on this value, ten factors with Eigen values above one were extracted in this study, organized in order of the report on maximum variance. These factors are named according to their nature.

**Table 1. The extracted factors together with their Eigen values, percentage of variance and cumulative**

Factor No.	Eigen value	Variance Percentage of Eigen value	Cumulative Variance Percentage
1	4.36	13.23	13.23
2	2.90	8.8	22.04
3	2.28	6.92	28.96
4	1.65	5.0	33.97
5	1.60	4.86	38.83
6	1.28	3.88	42.72
7	1.18	3.58	46.31
8	1.15	3.48	49.79
9	1.11	3.38	53.17
10	1.03	3.13	56.31

The correlation between each factor and each factor is called factor loading and its value varies between -1 and +1. The variance accounted for by each factor equals the square of its factor loadings. This variance is called Eigen value. The first Eigen value is always the highest and higher than 1. The Eigen value for subsequent factors is lower. In an ideal factor structure, each variable has high factor loading (more than 0.5) over a factor and low factor loading (below 0.2) over other factors. In addition, the factors with higher factor loading and their formal validity is desirable seem to measure the concealed characteristic.

In the first factor lied the behaviors "I always buy a specific brand", "I buy the new products to test them", "I buy the products more expensive than my social class", "I shop more than I need", "I buy special, made-to-order products", and this factor is the most important factor forming purchase habits of people in Tehran province. This factor accounts per se for 13.3% of the changes in shopping habits of people in this province, and may be called amusement shopping factor or habit given the contents of the markers put together.

In the second habit lie the behaviors "I always buy the Iranian products to support national pro-

duction”, “with the quality being alike, I prefer to buy Iranian products”, and “when buying, I regard economic development”, accounting for 8.8% of

the changes in shopping habits of people in Tehran province. This factor may be called social-value-based shopping factor or habit.

**Table 2. Factors and variables relating to the shopping habits of people in Tehran province together with the factor load**

Factor No.	Factor-related Marker	Item No.	Factor Load
1	I always buy a specific brand.	4	0.612
	I buy the new products to test them.	5	0.492
	I buy the products more expensive than my social class.	12	0.635
	I shop more than I need.	13	0.637
	I buy special, made-to-order products.	26	0.539
2	I always buy Iranian products to support national production.	21	0.739
	With quality being alike, I prefer to buy Iranian products.	22	0.679
	When buying, I regard economic development of the society.	29	0.735
3	I bargain over the product price.	3	0.805
	I buy on credit.	19	0.461
	I always buy the products of minimum prices.	20	0.491
	I deem bargaining at my dignity's level.	23	-0.638
4	I do the shopping online.	6	0.670
	I don't do the shopping on site.	8	-0.718
	I do the shopping over the phone.	9	0.681
5	Quality of the product is more important for me than the price.	25	0.750
	I always buy the product with after-sales-service.	27	0.671
	I buy to the level of my social dignity.	11	0.750
6	My family's opinions affect my shopping.	15	0.324
	I buy religiously legitimate products.	16	0.519
	I don't buy legally barred products.	28	0.556
7	I shop at the wholesalers or fields.	7	0.416
	I buy in large scale.	14	0.692
	Chain stores are more suitable places for shopping.	24	0.630
	I shop at the nearest store.	10	0.645
8	I always shop at the store with the salesman of which I have a good relationship.	17	0.644
	I always go shopping alone.	18	0.519
	I always pay in cash.	1	-0.683
9	When paying, I prefer cash to credit card.	2	-0.517
	The brands do not matter to me.	32	0.606
	I exchange my belongings as technology updates.	30	0.623
10	If in dire need, I also buy the legally barred products.	31	0.727
	I shop at the stores with parking space.	33	0.331

In the third factor lie the behaviors “I bargain over the price”, “I buy on credit”, “I always buy the products with the minimum price”, and “I deign to bargain”, and since the factor loading of “I deign to bargain” is negative and is part of this factor, its content is changed to “I deem bargaining at my dignity's level” so as to become in line with other behaviors (markers). These behaviors ultimately account for 6.92% of the changes in shopping habits of people in Tehran province. According to contents of the markers put together, this factor could be called the factor or habit of shopping with bargaining behavior.

In the fourth factor lie the behaviors “I do the shopping online”, “I do the shopping on site”, “I do the shopping over the phone”. Since the marker “I do the shopping on site” is of negative factor loading, contents of the item should be changed and altered to “I don't do the shopping on site”. These behaviors ultimately account for 5% of the changes in shopping habits of people in Tehran province. This factor could be called electronic shopping factor or habit according to contents of the markers put together.

In the fifth factor extracted from the factor space available lie the behaviors “quality is more impor-

tant for me than the price”, and “I always buy the products with after-sales-service”, which ultimately account for 4.86% of the changes in shopping habits of people in Tehran province. In view of the contents of the markers put together, this factor may be called quality-oriented shopping factor and habit.

In the sixth factor lie the behaviors “I shop at the level of my social class”, “my family’s opinion affects my shopping”, “I buy the religiously legitimate products” and “I don’t buy the legally barred products”, which ultimately account for 3.88% of the changes in shopping habits of people in Tehran province. Given contents of the markers put together, this factor may be called normal, rule-based shopping factor or habit.

In the seventh factor lie the behaviors “I shop at the wholesalers or fields”, “I shop in large scale”, “the chain stores are more suitable places for shopping”, which ultimately account for 3.58% of the changes in shopping habits of people in Tehran province. According to contents of the markers put together, this factor may be called large-scale shopping factor or habit.

In the eighth factor lie the behaviors “I shop at the nearest store”, “I always shop at the store with the salesman of which I have a good relationship”, and “I always go shopping alone”, which ultimately account for 3.48% of the changes in shopping habits of people in Tehran province. Given the contents of the markers put together, this factor may be treated as the behaviors based on shop characteristics. Therefore, the eighth factor could be called the factor or habit of shopping based on shop characteristics.

In the ninth factor lies the behaviors “I always pay in cash”, “when paying, I prefer credit card to cash” and “the brands don’t matter to me”. Since the factor loading of “when paying, I prefer credit card to cash” was negative, this marker should be changed to “when paying, I prefer cash to credit card”. These behaviors ultimately account for 3.38% of the changes in shopping habits of people in Tehran province. Given contents of the markers put together, this factor may be called traditional shopping factor or habit.

In the tenth factor, as the last extracted factor, lie the behaviors “I exchange my belongings as technology advances”, “if in dire need, I also buy the legally barred products”, and “I shop at the stores with parking space”, which ultimately accounted for 3.13% of the changes in shopping habits of people in Tehran province. According to contents of the markers put together, this factor may be called curious shopping factor or habit.

Results suggest that these ten factors identified in the context of data could totally predict 56.31% of the changes, which is a remarkable value.

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