

# Demographic Market Segmentation on usage of Clothes in Ampara District: Cloth Marketers Point of View

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## Abstract.

Demographic market segmentation studies have been conducted in different product or industry, in different countries, and in different time intervals. In addition to country- wide, time- wise, and product or industry-wise differences, there are demographic market segmentation studies in different methodologies. Thus, this study is conducted in cloth usage in Ampara District of Sri Lanka in 2015 using discriminant analysis. This study attempts to examine significant differences exist among the low usage group and high usage group in terms of demographic market segmentation and to develop a discriminant model between demographic market segmentation variables and usage groups. Based on previous empirical findings, a conceptual model is titled as selected demographic market segmentation variables and usage. This study considers 98 cloth marketers in Ampara District of Sri Lanka. This study adopted a non- probability sampling technique of convenience sampling. This study used a discriminant analysis as a new technique for demographic market segmentation. Descriptive statistics such as mean, standard deviation and coefficient of variation were used in this study. Wilky's Lambda and discriminant functional analysis were also made in this study. SPSS having the version of 22.0 was used in this study. It is found that there is significant difference among the low usage group and high usage group in terms of demographic market segmentation variables such as income, family size and age. Based on the results of the study, standardized canonical discriminant function has been formulated using standardized canonical discriminant function coefficient. Standardised canonical discriminant function has been created in this study.

**Keywords:** Cloth, Demography, Market Segmentation, Usage.

## Introduction

Demographic analysis is a market segmentation tool that may be helpful for identifying market potential, but it can be used for predicting usage of products or specific brand choice. It will help in aiding marketers to understand what action they must take to realize untapped potential within a market. Kotler (1997) defines demographic variables as demographic characteristics such as age, gender, family size, income, occupation, and so on. Beane & Ennis (1987) researched on a review of market segmentation. This study discussed five main bases such as geographic, demographic, psychographic, behaviouristic and image by an overview of the main techniques that were used to establish and verify segments, including automatic interaction detector, conjoint analysis, multidimensional

scaling and canonical analysis. Demographic market segmentation studies have been conducted in different product or industry, in different countries, and in different time intervals. Boote (1981) studied about market segmentation by personal values and salient product attributes. The use of values in conjunction with 3 more common psychographic variables were considered in this study. Conclusion supported that brand preference is not differentiated with respect to demographic characteristics of consumers who ate at each of 2 restaurant chains and had a stated preference for one or the other. However, market segments based on value orientations of these fast-food restaurant customers did reveal differences in brand preference. Formica & Uysal (1995) studied about a market segmentation of festival visitors of Umbria Jazz Festival in Italy. Segments are characterized based on differentiating motivations, demographic, and event behavior characteristics. Bruwer & Li (2007) studied about wine-related lifestyle market segmentation (demographic and behavioural factors) among wine drinking residents in South Australia. The research reconfirms that there are five lifestyle-related segments in the South Australian wine market and that this is of an evolving nature.

In addition to country- wide, time- wise, and product or industry- wise differences, there are demographic market segmentation studies in different methodologies. Gupta & Pradeep (1994) studied about how to use demographic variables to determine segment membership using Logit Mixture Models. This study proposes an extension of the logit-mixture model that defines prior segment membership probabilities as functions of concomitant (demographic) variables. Using this approach, it is possible to describe how membership in each of the segments, segments being characterized by a specific profile of brand preferences and marketing variable sensitivities, is related to household demographic characteristics. Thus, this study is conducted in cloth usage in Ampara District of Sri Lanka in 2015 using discriminant analysis. Ampara District of Sri Lanka is one of the biggest districts in population-wide. Usage of cloth products is also high comparing with other districts. "Clothes" is the common word to use when you're talking about clothes that people wear. Cloth is outer wears such as sarong, shirt, trouser, etc. of males and salwar, etc. of females. Usage refers to wearing these clothes. Mashlow (1943) put forward a theory of hierarchy of needs that used the terms physiological, safety, belongingness & love, esteem and self-actualization. Physiological needs are the physical requirements for human survival. If these requirements are not met, the human body cannot function properly and will ultimately fail. Physiological needs are thought to be the most important; they should be met first. They are air, water, and food are metabolic requirements for survival of humans. Clothing and shelter provide necessary protection from the elements. This similar notion has been emphasised by majority of all content theories of motivation. Thus, usage of clothes is unavoidable for human existence.

### **Statement of the Problem**

Numbers of previous empirical studies have affirmed the relationship between different market segmentation variables and purchase behavior in different contexts as mentioned in the introductory part. In a survey of data on market segmentation of this sort, Ronald (1966) reported that the average co-relation between people characteristics and purchase behavior is lower than 0.2. But, when using 17 demographic, sociographic, and personality variables, Frank (1966) found that it was able to account for only approximately 4% of the variance in purchase behaviour. It is clear that demographic factors such as age, income, family size, religious affiliation, and so on are of primary importance in explaining purchase behavior. Markets, including most probably the majority of consumer goods markets, are composed of products which have appeal to many demographic "groups." In

few other studies, benefit segmentation has been studied with purchase behaviour. Russell (1968) studied about benefit segmentation together with purchase behaviour. Study argued that most techniques of market segmentation rely only on descriptive factors pertaining to purchasers and are not efficient predictors of future buyer behavior. This study found that the belief of segmentation strategy is that the benefits which people are seeking in consuming a given product and are the basic reasons for the existence of true market segments. Benefit segmentation also decides the purchase behavior. Further, studies have been conducted between market segmentation and competitive brand (purchase behavior). Hammond, Ehrenberg & Goodhardt (1996) studied about market segmentation for competitive brands of brand purchasers in over 20 grocery product categories using consumer panel data. Study finds that the consumer profiles of competitive brands differ little in terms of the commonly-used classification measures such as socio-demographic characteristics.

### Research Question and Objectives

Based on previous empirical findings, and the contradictory viewpoints of research findings, this study raises the following research questions and research objectives as shown in Table 1.

**Table 1.** Research questions and objectives

Research questions	Research objectives
1. Whether significant differences exist among the low usage group and high usage group in terms of demographic market segmentation variables?	1. To examine significant differences exist among the low usage group and high usage group in terms of demographic market segmentation
2. Is it possible to develop a discriminant model between demographic market segmentation variables and usage groups	2. To develop a discriminant model between demographic market segmentation variables and usage groups

### Significance of the Study

This study is helpful on several grounds. This study is important for marketing managers. Segmentation is important (a) to improve the marketing program for an existing product; and (b) to develop a new product. Demographic segmentation is current popular technique for segmentation. There are some of the more popular methods and theories in the area of market segmentation. Demographic method, today, is the most popular market approach for segmentation. It should be used as a predictor of purchase behaviour. On the basis of an analysis of a large-scale survey of consumer expenditures, incomes, and savings, Friend & Kravis (1957) concluded that many of the statistical tables they analyzed were "more remarkable for the similarity of consumption patterns they reveal than for the differences. The authors also showed some interesting patterns of consumption among people in different demographic categories and geographic locations. Next, demography can play an important analytical role, both when brand preference apparently is not important or is absent (as in commodity markets), and when the demographic characteristic itself is directly related to -and perhaps causes -consumption. Simply by knowing the age distribution of the population, marketing managers should be able to predict quite accurately whether the overall consumption of products is going to increase or decline in the near future. What they probably will not be able to predict solely from this information

is the proportion of older people who will prefer one particular brand of product over another brand of the same product type. This study fills the literature and methodological gap. Findings will be helpful for clothe users who can buy clothes according to their age, income and family size. It will also give benefit to cloth marketers who can discriminate their clothing in terms of demographic market segmentation.

## **Review of Literature**

Ismail (2012) researched about demographic profile of micro, small and medium entrepreneurs in South Eastern Region of Sri Lanka. Objective of this research is to identify the demographic profile of Micro, Small and Medium Entrepreneurs in South Eastern Region of Sri Lanka. 121 entrepreneurs have been selected as sample size using convenience sampling method. It is concluded that age, gender, family size, income, occupation and education have been identified as demographic profile of Micro, Small and Medium Entrepreneurs in South Eastern Region of Sri Lanka. Kuo, Ho & Hu (2002) studied about integration of self-organizing feature map and K-means algorithm for market segmentation. This study aims to compare three clustering methods: (1) the conventional two-stage method, (2) the self-organizing feature maps and (3) two-stage method, via both simulated and real-world data. The proposed two-stage method is a combination of the self-organizing feature maps and the *K*-means method. The simulation results indicate that the proposed scheme is slightly better than the conventional two-stage method.

Kucukemiroglu (1999) studied about market segmentation by using consumer lifestyle dimensions and ethnocentrism. Study identifies consumer market segments existing among Turkish consumers by using lifestyle patterns and ethnocentrism. Data for the study were collected through personal interviews in Istanbul. Survey findings indicate that there are several lifestyle dimensions apparent among the Turkish consumers which had an influence on their ethnocentric tendencies. Non-ethnocentric Turkish consumers tend to have significantly more favorable beliefs, attitudes, and intentions regarding imported products than do ethnocentric Turkish consumers. Using the lifestyle dimensions extracted, three distinct market segments were found. Consumers in the Liberals/trend setters customer market segment showed similar behavioral tendencies and purchasing patterns to consumers in western countries.

Formica & Uysal (1998) studied about market segmentation of an International Cultural-Historical Event in Italy. This study explores the existing markets of a unique annual event, the Spoleto Festival in Italy, that blends inter nationally well-known cultural exhibitions with historical settings. Behavioral, motivational, and demographic characteristics of festival visitors were examined by using a posteriori market segmentation. Factor analysis was performed to determine the leading motivations for attending the international cultural-historical event, whereas cluster analysis was employed to identify groups of respondents based on motivational behaviors. Based on the findings, two distinct groups were formed: Enthusiasts and Moderates. The results of the study show statistically significant differences between the two groups in terms of age, income, and marital status.

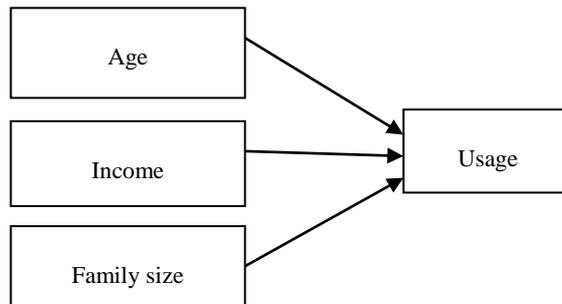
Bucklin & Gupta (1992) describes an approach to market segmentation based on consumer response to marketing variables in both brand choice and category purchase incidence. The approach reveals segmentation as well as the nature of choice and incidence response for each segment. Brand choice and purchase incidence decisions are modeled at the segment level. The procedure permits an analysis of the demographic,

purchase behaviour, and brand preference characteristics of each response segment. The authors illustrate the approach with scanner panel data on liquid laundry detergents and find segmentation in price and promotion sensitivity for both brand choice and category purchase incidence. Results suggest that many households that switch brands on the basis of price and promotion do not also accelerate their category purchases.

Lin (2002) studied about segmenting customer brand preference using demographic or psychographic variables. Peter & James (1987) studied about market segmentation, product differentiation, and marketing strategy. Kathleen & Linda (1994) studied about variable Selection in tourism market segmentation models.

### Conceptual Model

Previous empirical findings stated in introductory part and statement of the problem and review of literature assist to derive the following conceptual model as depicted in Figure 1 for the proposed study. Conceptual model is titled as selected demographic market segmentation variables and usage.



**Figure 1.** Selected demographic market segmentation variables and usage (Source: Ismail, 2012; Kuo, Ho & Hu, 2002; Kucukemiroglu, 1999; Formica & Uysal, 1998; Bucklin & Gupta, 1992; Lin, 2002; Peter & James, 1987; Kathleen & Linda, 1994)

### Research Design and Methodology

This study is a blended research design that covers both exploratory and conclusive research designs. Exploratory research design is adopted for stating research problem. Following exploratory research design, conclusive research is carried out. Descriptive research is done as a part of conclusive research design. Single-cross sectional study is undertaken because data are collected only once.

### Population and Sample

Population refers to all the cloth marketers who have textiles in Ampara District of Sri Lanka. This study considers 98 cloth marketers in Ampara District of Sri Lanka. They were asked about the selected demographic marketing variables such as age, income and family size. They were also asked about the usage group of clothes such as low usage group and high usage group. A simple questionnaire was designed to issue and collect the data using Final Year Undergraduates from Faculty of Management and Commerce, South Eastern University of Sri Lanka. Data were collected during the second quarter of the 2015. Response rate was 80% of the issued questionnaire.

### Sampling Technique

In order to undertake probability sampling technique, research needs sampling frame that covers entire list of cloth marketers in Ampara District of Sri Lanka. This made the researcher difficult to collect samples using probability sampling technique. Next, acquiring the updated list of cloth marketers in Ampara District of Sri Lanka is also not found from any source. Then, sampling characteristics of cloth marketers in Ampara District of Sri Lanka seems to be homogenous. Due to these justifications, thus, this study adopted a non- probability sampling technique i.e. convenience sampling in this study.

### Analytical Technique

Previous studied followed different analytical techniques. But, this study used a discriminant analysis as a new technique for demographic market segmentation. Descriptive statistics such as mean, standard deviation and coefficient of variation were used in this study. Wilky's Lambda and discriminant functional analysis were also made in this study. SPSS having the version of 22.0 was used in this study.

### Results and Discussion of Findings

This is a two- group discriminate analysis. From the group statistics, it is understood that two groups (low and high usage groups) are highly separated in terms of income, family size and age. Mean and standard deviation of group statistics are revealed in Table 2.

**Table 2.** Mean and standard deviation of group statistics

Usage		Mean	Std. Deviation	Valid N (listwise)	
				Unweighted	Weighted
1	Age	26.6739	7.67696	46	46.000
	Income	2.6848E4	7495.08696	46	46.000
	Family size	3.1304	.34050	46	46.000
2	Age	38.9615	13.06839	52	52.000
	Income	5.1538E4	6563.30123	52	52.000
	Family size	3.9231	.76302	52	52.000
Total	Age	33.1939	12.45500	98	98.000
	Income	3.9949E4	14216.56682	98	98.000
	Family size	3.5510	.71971	98	98.000

Using the mean and standard deviation of the group statistics, coefficient of variation (CV) is calculated using formulae (1).

$$CV = (\text{Standard deviation} / \text{Mean}) * 100 \dots\dots\dots \text{Formulae (1)}$$

CV has been calculated for age, income and family size for group 1 (low usage group) and group 2 (high usage group). The differences are shown in the following Table 3.

**Table 3.** Differences of CV between group 1 and group 2

Predictors	Percentage
Age	5%
Income	15%
Family size	9%

The above results are further proved by structure matrix which shows the correlation between individual predictors with the function. Structure matrix orders income, family size and age as the first, second and third places in order of importance for the discriminant function. Structure matrix is shown in Table 4.

**Table 4.** Structure matrix

	Function
	1
Income	.876
Family size	.327
Age	.281

Pooled within-groups correlations between discriminating variables and standardized canonical discriminant functions  
Variables ordered by absolute size of correlation within function.

Group centroids are the mean values for the discriminant scores for a particular group. In this study, there are two groups (low usage group and high usage group). There are two group centroids. Group centroid for the first group is negative. This is because mean, standard deviation and coefficient of variance for income in the first group (low usage group) are higher than those of second group (high usage group). Group centroid for the second group is positive. This is because mean, standard deviation and coefficient of variance for family size and age in the first group (low usage group) are lower than those of second group (high usage group). Group centroids are shown in Table 5.

**Table 5.** Functions at group centroids

Usage	Function
	1
1	-2.132
2	1.886

Unstandardized canonical discriminant functions evaluated at group means

Pooled within - group correlation matrices shows the correlation between predictors such as age, income and occupation. Correlation between age and income (0.145) and income and family size (- 0.054) are low. Thus, there is no multi-collinearity problem. Table 6 shows the correlation between predictors. They are shown in Table 6.

**Table 6.** Pooled within-groups matrices

		Age	Income	Family size
Correlation	Age	1.000	.145	.829
	Income	.145	1.000	-.054
	Family size	.829	-.054	1.000

Tests of Equality of Group Means incorporate Wilky's  $\lambda$  and F statistics. Wilky's  $\lambda$  for each predictor is the ratio of the within- group sums of squares (SS residual/ SS error) to the total sums of squares (SSTotal). Thus, its value can vary between 0 to 1. The more closer to the zero there may be different between two groups. In this study, values of Wilky's  $\lambda$  for income, family size and age are 0.241, 0.695 and 0.755 respectively. Thus, income plays a vital role than family size and age in determining the usage. Univariate F

statistics for age, income and family size are 31.138, 302.331 and 42.171 respectively. df1 is the degree of freedom for numerator. This is  $C - 1$  that equals 1 (2 - 1) for all predictors. df2 is the degrees of freedom for denominator. This is  $n - 2$  that equals 96 for all predictors. p (sig.) values for age (0.000), income (0.000) and family size (0.000) are less than 0.05. Thus, all the predictors such as age, income and family size are significantly differentiate between two groups i.e. low usage groups and high usage groups. Tests of Equality of Group Means are shown in Table 7.

**Table 7.** Tests of equality of group means

	Wilks' Lambda	F	df1	df2	Sig.
Age	.755	31.138	1	96	.000
Income	.241	302.331	1	96	.000
Family size	.695	42.171	1	96	.000

Canonical Discriminant Functions shows the eigenvalues. Since there are two groups (low usage and high usage groups) only one discriminant function is estimated. The eigenvalue of this discriminant function is 4.103 and it explains 100 percent of the explained variance. The more higher eigenvalue is the more better. Canonical correlation associated with this discriminant function is 0.897. The square of this correlation equals 0.804609 which indicates around 80% of the variance in the dependent variable (usage) is explained by this model that consists of age, income and family size. Thus, there is a research gap for finding the remaining 20 % of the variance in the usage that is accounted by one or more unknown predictors. Canonical Discriminant Functions are depicted in Table 8.

**Table 8.** Eigenvalues of canonical discriminant functions

Function	Eigenvalue	% of Variance	Cumulative %	Canonical Correlation
1	4.103 <sup>a</sup>	100.0	100.0	.897

a. First 1 canonical discriminant functions were used in the analysis.

### Hypothesis Testing and Wilks' Lambda

Researcher set the hypothesis of testing whether group means are equal. Hypotheses are stated as denoted below.

Null hypothesis: Means of all discriminant functions in all groups are not different i.e. group means are equal.

Alternative hypothesis: Means of all discriminant functions in all groups are different i.e. groups means are not equal.

Wilks' Lambda is used to test the null hypothesis that means of all discriminant functions in all groups are different. Value of Wilks' Lambda is 0.196 which is estimated on the basis of the Chi- square transformation and degrees of freedom. In this study, Wilks' Lambda is significant. p value (Sig. value) is less than significance level (5%). Thus, researcher rejects null and do not reject alternative hypothesis. Accepting null hypothesis refers to means of all discriminant functions in all groups are different. Low usage group and high usage group differ in terms of income, family size and age. Values of Wilks' Lambda, Chi- square, degrees of freedom and Sig. values are tabulated in Table 9.

**Table 9.** Wilks' lambda

Test of Function(s)	Wilks' Lambda	Chi-square	df	Sig.
1	.196	154.027	3	.000

### Discriminant model

Based on the results of the study, standardized canonical discriminant function can be formulated using standardized canonical discriminant function coefficient that is shown in Table 10.

**Table 10.** Standardized canonical discriminant function coefficients

	Function
	1
Age	-.575
Income	1.006
Family size	.858

Formulated standardised canonical discriminant function is denoted in Formula (2).

$$D = - 0.575 \text{ Age} + 1.006 \text{ Income} + 0.858 \text{ Family size} \dots\dots\dots \text{Formulae (2)}$$

### Conclusions

Results of the descriptive statistics for the group statistics (group mean and group standard deviation) revealed that two groups (low and high usage groups) are highly separated in terms of income, family size and age. Results of coefficient of variation (CV) show that the difference between income, family size & age and low & high usage groups are 15%, 9% and 5% respectively. Structure matrix orders income (.876), family size (.327) and age (.281) as the first, second and third places in order of importance for the discriminant function.

In this study, there are two groups (low usage group and high usage group). There are two group centroids. Group centroid for the first group is negative. This is because mean, standard deviation and coefficient of variance for income in the first group (low usage group) are higher than those of second group (high usage group). Group centroid for the second group is positive. This is because mean, standard deviation and coefficient of variance for family size and age in the first group (low usage group) are lower than those of second group (high usage group). Tests of Equality of Group Means incorporate Wilky's  $\lambda$  and F statistics. Value of Wilky's  $\lambda$  can vary between 0 to 1. The more closer to the zero there may be different between two groups. In this study, values of Wilky's  $\lambda$  for income, family size and age are 0.241, 0.695 and 0.755 respectively. Thus, income plays a vital role than family size and age in determining the usage.

In addition to this, Univariate F statistics for age, income and family size are 31.138, 302.331 and 42.171 respectively. p (sig.) values for age (0.000), income (0.000) and family size (0.000) are less than 0.05. Thus, all the predictors such as age, income and family size are significantly differentiate between two groups i.e. low usage groups and

high usage groups. It is found that there is significant differences among the low usage group and high usage group in terms of demographic market segmentation. Based on the results of the study, standardized canonical discriminant function has been formulated using standardized canonical discriminant function coefficient. Formulated standardised canonical discriminant function is:  $D = - 0.575 \text{ Age} + 1.006 \text{ (Income)} + 0.858 \text{ (Family size)}$ . Thus, a discriminant model has been developed between demographic market segmentation variables and usage groups.

### **Limitations of this study and future research venues**

This study is geographically limited to geographical coverage of ADSL. This study may be extended to island-wide. Researcher used a non- probability sampling technique of convenience. Study may be conducted using probability sampling technique. Sample size may be limited to 98. When selecting a probability sampling technique, sample size may be taken in a higher number.

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