

STORE LOYALTY PRONENESS OF APPAREL SHOPPER SEGMENTS: A DATA MINING APPROACH

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ABSTRACT

The primary objective of this article is to demonstrate the impact of using data mining techniques in an attempt to bring the fields of management and IT much closer. This article is an empirical research on the application of descriptive data mining models in the field of shopping behavior in the context of apparel retailing. This paper uses Cluster Analysis and then explains how they can be applied to a survey based data for segmenting customers. The results from the cluster analysis are correlated with the Store Loyalty Proneness of shoppers. The findings of this research provide some very significant insights into consumer behavior at the retail level.

Keywords: Data Mining, Apparel Retailing, Cluster Analysis, and Store Loyalty Proneness

1. INTRODUCTION

Data mining is an emerging field that focuses on access of information useful for high-level decisions. It is the confluence of multiple disciplines and enables business executives to manage their data to make relevant decisions [1]. Retail is the main field of application of data mining technology. It is India's largest industry accounting for over 10 per cent of the GDP and 8 per cent of employment. The industry is facing the new millennium, and the models of the past are not sufficient to ensure tomorrow's successes. The stereotype of a homogeneous market is a fiction that no longer exists. Firms are now employing the strategy of segmentation, viewing the market made up of small segments, each more homogeneous in important characteristics. [2]

2. OBJECTIVES OF THE STUDY

This study seeks to identify clusters of Indian shoppers on the basis of their attitude towards shopping and to find the association between shopping attitude and consumer's proneness towards store loyalty. The clusters obtained for shoppers are called shopper typologies. The research is conducted in the context of apparel retailing. The objectives are:

- To use data mining techniques to segment Indian customers on the basis of their attitude towards shopping (i.e. Shopping Enjoyment) and;
- To find the association between shopping attitude and store loyalty proneness.

3. LITERATURE REVIEW

Liu & Luo applied clustering data mining method to customers of store for the analysis of their characteristics and the relationship between customers and product categories [4]. Using data-mining techniques, Hockey Min profiled 301 supermarket consumers based on their loyalty to 10 supermarkets in U.S and found a significant relationship between valued consumers' shopping behavior and demographic variables [5]. In Asian context, a study of 400 supermarket consumers in Qatar, Jamal *et al.* used cluster analysis to identify six shopper typologies on specific reasons for shopping such as Socializing; Disloyal; Independent; Escapist; Apathetic; and Budget Conscious Shoppers [6]. In Indian context Goyal & Mittal [3] identified two shopper types i.e. Pro-Shopper and Anti-Shopper, based on the degree of enjoyment they felt from shopping. In another study of 300 shoppers, Sinha [7] clustered shoppers in two segments- (1) Fun Shoppers (2) Work Shoppers. Batra and Ahtola [8], also investigated consumers' attitude towards brands and behaviors, and argued that it has at least two distinct dimensions, hedonic and utilitarian.

4. RESEARCH METHODOLOGY

4.1. Sampling Design, Data Collection and Research Instrument

A structured questionnaire was administered on 487 respondents of the study. Only adult respondents were included. The "mall-intercept" non-probability sampling was used for data gathering. The shopping attitude scale was included to segment shoppers on the "Hedonism vs. Utilitarianism" behavior. The shopping attitude scale was developed by O'Guinn, Faber [9] and store loyalty proneness scale was developed by De Wulf, Odekerken-Schroder, Iacobucci [10].

4.2. Statistical Data Mining

The data obtained is classified using data mining technique, *K-means Cluster Analysis* due to large sample size. takes input parameter, k , and partitions a set of n objects into k clusters so that the intracluster similarity is high but the intercluster similarity is low. Cluster similarity is measured in regard to the *mean* value of the objects in a cluster, which can be viewed as the cluster's centroid [11].

5. RESULTS

To find the association between shopping attitude and store loyalty proneness, the statistical technique of Pearson Coefficient of Correlation has been applied. It measures the degree of linear association between two variables. It varies between +1 to -1, with 0 representing absolutely no association. The higher is the correlation, the stronger is

Table 1
Final Cluster Centres

<i>Survey Items</i>	<i>Cluster 1</i>	<i>Cluster 2</i>
Shopping Attitude 1	5	1
Shopping Attitude 2	5	2
Shopping Attitude 3	5	2
Shopping Attitude 4	5	1

Table 2
Iteration History

<i>Iteration</i>	<i>Change in Cluster Centres</i>	
	1	2
1	.767	.959
2	.000	.000

Table 3
Number of Cases in Each Cluster

<i>Cluster</i>	<i>No. of Cases</i>
1	231
2	102
Valid	333
Missing	000

the level of association [12]. Since in this study, two variables under study i.e. shopping enjoyment and store loyalty, are measured on an interval scale, thus a necessary condition of this statistical tool is fulfilled.

Table 4
Store Loyalty Proneness and Shopping Attitude- Correlation Analysis

N = 333	Shopping Attitude
Store Loyalty Proneness	
Pearson Correlation	-.600*
Sig. (2-Tailed)	.000

* Correlation is significant at the 0.01 level (2-tailed)

6. DISCUSSIONS AND CONCLUSION

Looking at Table 1 “Final Cluster Centers”, a review of extant literature and the terminology of the Shopping Attitude scale the authors have chosen to term the clusters as

- Shopping Seekers (Cluster 1): 231 respondents (69%)
- Shopping Avoiders (Cluster 2): 102 respondents (31%)

The Shopping Seekers feel that shopping for apparels makes them feel happy and Shopping Avoiders feels exactly opposite of what Shopping Seekers feel.

The findings of this research are in line with the **bi-polar** shopping orientation concept of Hedonism and Utilitarianism; 2-cluster solutions of Pro-Shoppers and Anti-Shoppers by Goyal and Mittal [3], Fun shoppers vs. Work shoppers by Sinha et al. [13]; Bellenger and Korgaonkar [14] and indicates that overall, consumers with positive shopping attitudes exhibit low store loyalty.

This research has given another important finding that shoppers’ loyalty proneness has a negative association with shopping attitude. The findings in this research demonstrate the impact that IT Tools such as data mining can have on critical managerial issues. The challenge for practitioners of management is to identify the areas wherein IT tools can be of use and an equal reciprocal challenge for IT professionals is to make available the customized solution.

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