Chapter 8

A Fuzzy Clustering Approach for Segmenting Retail Industry

M. Hemalatha
M.A.M. College of Engineering, India

ABSTRACT

The foremost theme of this chapter is to utilize the subtractive clustering concept for defining the market boundaries in the fuzzy-based segmentation. In this sense, the present work starts by analyzing the importance of segmenting the shoppers on the basis of store image. After reviewing the segmentation literature, the authors performed a segmentation analysis of retail shoppers in India. Researchers often use clustering analysis as a tool in market segmentation studies, the results of which often end with a crisp partitioning form, where one member cannot belong to two or more groups. This indicates that different segments overlap with one another. This chapter integrates the concept of application of subtractive clustering in fuzzy c means clustering for profiling the customers who perceive the retail store based on its image. Fuzzy clustering is also compared with hard clustering solutions. Then the authors predict the model using discriminate analysis. Further, the chapter concentrates on the answer tree model of segmentation to identify the best predictor. Main conclusions with implications for retailing management are shown.

INTRODUCTION

India is the ninth-largest retail market in the world. It is expected to grow further in the coming years. At present, organised retailing comprises only six percent of the market, but its share is expected to rise to 15 percent within two years. This growth is being driven by several factors. Retail demand in India is being fuelled by country’s huge middle class, a large young working population that is less burdened than previous generations with educating children and providing healthcare for elderly parents, while retirement is still a long way off, Meanwhile, India’s economy is increasing rapidly (Jindal, 2008). Shopping today is much more than just buying; it is an experience in itself. To best utilize the available time, Indian consumer is on the look-out for avenues that would give him the maximum value for his money and time spent (Parikh, 2006).
It has been well documented in the marketing literature that customer satisfaction is critical to any businesses’ success. However, it is far less clear as on how marketers comprehend customer differences in customer satisfaction evaluations, and leverage such understanding in forming their marketing strategies. Recently researchers have begun to explore the notion of individual or segment differences in the formation of overall satisfaction judgments (Jianan & DeSarbo, 2005). In spite of the obvious importance of the retail innovation in India, little is known about the process of consumer acceptance responsible for the success or failure of a retail institution. To answer this question, a study of market segments, responsible for the success of a retail innovation was designed. This chapter concerned with identifying the characteristics of Indian market segments in selecting the retail outlet using fuzzy clustering technique.

Knowledge of the different types of shoppers can be very helpful to business in planning merchandising, promotion, pricing, and location activities (Lill, et al., 1981). Segmentation of shoppers has been explored by many academic researchers and business practitioners seeking to understand shopping behaviour and to develop marketing strategies for particular customer groups. Market segmentation holds the key to successful marketing strategy as it encourages understanding of the key variables that differentiate specific segments (Jarratt, 1996). The demographic variables (Allred, et al., 2006; Roos, et al., 2005; Yiyang, et al., 2007; Bruwer & Li, 2007), Psychographic variables (Allred, et al., 2006; Yiyang, et al., 2007), Shopping orientation (Sinha, 2003), benefit segmentation (Avi, et al., 2008), different roles (Fuller & Matzler, 2008), hierarchical self-organizing segmentation model (Hung & Tsai, 2008), purchasing behaviour (Simkin, 2008), and Product attribute (Sewall, 1978; Yiyang, et al., 2007) dimensions are generally used variables in the segmentation studies and in the design of marketing plans. Further, Yu and Zhou (2010) explored potential regional differences by comparing young consumers from the better-developed coastal region and the less-developed inland region. Menzly and Ozbas (2010) presented evidence supporting the hypothesis that due to investor specialization and market segmentation.

However, segmentation criteria based on store image using fuzzy logic seems to be more realistic in order to explain the differences among consumers inside a market. So, it could be used as a segmentation variable of the market. Therefore, the objective of this study is to segment shoppers in India based on store image using fuzzy logic. A better understanding of shopper segments will encourage retailers to refine merchandise, store environments, and marketing programmes to consumers’ precise desires. Market researchers have discussed on store image based market segmentation in the perspective of various partitioning and clustering methods, but such studies have toiled with unsupervised clustering approaches. But, no studies have identified the integration of fuzzy c-means with subtractive clustering for obtaining store image based market segmentation.

Store image is defined as the overall attitude towards the store based upon the perceptions of relevant store attributes. Store Image segmentation provides guidelines for a retail firm’s marketing strategy and can increase profitability. The foremost theme of this research is to utilize the subtractive clustering concept for defining the market boundaries in the fuzzy based segmentation. Researchers often use clustering analysis as a tool in market segmentation studies, the results of which often ends with crisp partitioning form, in simple words, where one member cannot belong to two or more groups. This indicates that different segments overlap with one another. This study integrates the concept of application of subtractive clustering in fuzzy c means clustering for profiling the customers who perceive the retail store based on its image. Fuzzy clustering is also compared with hard clustering solutions. We have also predicted the model using discriminate analysis.
Related Content

Qualitative Reasoning Approach to a Driver’s Cognitive Mental Load
www.igi-global.com/chapter/qualitative-reasoning-approach-driver-cognitive/72779?camid=4v1a

Bio-Inspired Optimization Algorithms for Arabic Handwritten Characters
www.igi-global.com/chapter/bio-inspired-optimization-algorithms-for-arabic-handwritten-characters/180977?camid=4v1a

Data Storage Security Service in Cloud Computing: Challenges and Solutions
www.igi-global.com/chapter/data-storage-security-service-in-cloud-computing/180940?camid=4v1a

Cognitive Process of Moral Decision-Making for Autonomous Agents
José-Antonio Cervantes, Luis-Felipe Rodríguez, Sonia López, Félix Ramos and Francisco Robles (2013). International Journal of Software Science and Computational Intelligence (pp. 61-76).
www.igi-global.com/article/cognitive-process-of-moral-decision-making-for-autonomous-agents/108930?camid=4v1a