DEMAND ESTIMATION IN APPAREL RETAILING USING MODIFIED MAXIMUM UTILITY MODEL AND CONJOINT ANALYSIS

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ABSTRACT

Apparel retailing is the selling of apparel products to the end user. In the Indian retail scenario, the apparel sector is the second largest in terms of value next to food and grocery. It is further expected to grow because approximately 300 international apparel retailers are planning to open stores in India where, the apparel retail sector is still largely unorganized, and now it is in the organizing phase. The organized retailers are doing business systematically but still they are facing few issues in accurate demand estimation due to the diversity in customer preferences. Among the various operations like promotion, pricing etc., in an apparel retail business, merchandising is one of the most important operation due to its influence on the profit of the retail business. In merchandising, demand estimation is the first step based on which all the other activities like production, promotion, take place. Demand estimation is the link between the level of demand and the influencing variables like price, color, etc. An accurate estimation helps the retailer in improving the profit by avoiding excessive inventory costs and discount sales.

Based on the literature review, a few gaps were identified in demand estimation in the field of apparel retailing. Many work have been carried out in demand estimation for apparel products. From the published

articles, it can be observed that demand for the product was estimated by using past sales data, expert opinion data etc,. In those articles, most of them have used past sales data which could not incorporate customer taste, further it could not estimate the demand for new products and it could not incorporate customer substitution. Among the earlier studies that concentrated on apparel demand estimation, there had been no studies that estimated the demand integrating customer stated preferences and incorporating customer product substitution. In line with the identified research gap, the focus of this research is to first develop a demand estimation model for apparel products and then to optimize the estimated demand.

A preliminary study was carried out to understand the factors influencing customers leaving a store without making a purchase of his/her product in mind. This study was expected to find answers on the customer shopping experience and also on the influencing factors that lead to customer dissatisfaction. For this study as per the standards a questionnaire was prepared based on the items from the previous research; it was tested for its validity and reliability. Data were collected from respondents for a month from 1665 respondents in an apparel retail store in Chennai. Results of this preliminary study revealed that respondents leaving the store without the purchase of the product in mind was 26.47%. The major factor influencing customer leaving the store empty-handed was identified as product based factors with 27.6%. A retailers' survey to understand the reasons for product non-availability was conducted and the reason was mainly attributed to inefficient forecast.

Based on the preliminary study, a detailed research was carried out to develop a demand estimation model for apparel products using customer stated preference data. A face-to-face survey was conducted for a month in an apparel retail store in Chennai. The product selected for this purpose was a

women's fashion product, known as a Kurti. Therefore, customers leaving the kurti section were surveyed. Conjoint analysis was used to collect customer stated preference data in this study. The stated preferences for kurti products given by the respondents' in the form of ratings were estimated as a utility score for each attribute of a kurti product. Based on the utility scores, a demand share estimate was also calculated. As the Maximum Utility Model (MUM) did not consider customers substitution, a modified MUM was proposed in this research. The estimated demand was validated against actual sales data. The proposed model was validated for different apparel products like sarees and lingerie and two different apparel retail stores. The estimated demand was optimized for profit using linear programming. For the optimized demand estimates, the customer service level was also calculated.