This thesis entitled “Mathematical Programming Models for Market Segmentation Decision System” primarily deals with application of mathematical programming models to some of real life multi-criteria market segmentation decision systems. Consumer market is normally heterogeneous, complex, wide and diverse in nature. The marketing activities are normally carried out in a highly complex environment where consumer can be segmented in the market place based on several characteristics. The application of mathematical programming models in market segmentation planning and decision making provides a logical route to express a real world marketing situation to a marketing decision system. In this thesis, the use of mathematical programming models for multi-objective optimisation is done in the design of market segments and allocation of resources to each market segment based on different market mixes. As, in general, there does not exist a single solution which can maximise/minimise all the criteria in the decision environment, and the result involves multiple alternatives, fuzzy logic based multi-objective programming algorithms have been adopted to single out the most desired solution. For this study marketing of dairy products in Keonjhar district of the Orissa state in India has been considered.

The thesis has been organised in four parts viz., general introduction, theory, application and remarks. Part - I of the thesis contains general introduction of the work done and brief outline of dairy industry and marketing of dairy products in Keonjhar district while part - II deals with the theory behind it. This part focuses on brief review of market segmentation, quantitative models in market segmentation and mathematical programming models for decision systems. The application part contains five models based on case studies viz., marketing channels model, advertising budget allocation model, package design model, pricing model, retailer outlet location model which have employed fuzzy multi-objective programming techniques and the results obtained have been discussed very extensively with sufficient interpretations. Finally, the summary of the work, concluding remarks and the scope for further research in this area of market segmentation decision have been presented in Part - IV.