

# Chapter 63

## A New Perspective on RFM Analysis

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### ABSTRACT

*The aim of this chapter is proposing a novel integrated Fuzzy Group Multiple Attribute Decision Making (FGMADM) and Fuzzy C-Means Clustering (FCM) as a DM tool for segmentation of customers (retailers), based on an updated RFM model. For this purpose, the most important criteria to evaluate retailers from the in depth literature survey and experts' opinion are added to the traditional RFM model. In addition, in order to make the model more efficient, FGMADM approach, in this paper, Fuzzy Group Step-wise Weight Assessment Ratio Analysis (FGSWARA) is used to weight KPIs. Then, FCM is applied to segment customers, based on their purchase behavior (RFM scores). A case study in one of the most famous Fast Moving Consumer Goods (FMCG) companies in Iran illustrated the applicability of the proposed model.*

### INTRODUCTION

Customers are one of the significant assets of every organization and without satisfied and loyal customers there is no chance of success. In addition, due to the rapid altering environment and facing with fierce market competition, creating a strong relationship with customers is an obligatory task. Furthermore, a limited number of resources makes impossible to satisfy all customers. To wrestle with the above mentioned issues, market segmentation is one of the best suggested approaches. The term was introduced by Wendell R. Smith, an American marketing researcher in the late 1950s (Smith, 1956). Dividing a market into different sections in order to select some of which as target markets and provide the most appropriate production mix, is the whole aim of market segmentation.

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## ***A New Perspective on RFM Analysis***

A company should think strategically about its relationship with consumers, and perhaps they had better not have “one fixed strategy”. Retailers are one of the most important parts of channel management. Furthermore, an appropriate retailer segmentation strategy can increase competitive advantage and customer satisfaction, decrease distribution cost and it can accelerate the purchasing process. Retailer segmentation is the process of dividing a set of retailers into distinct subset of retailers, where any subset can be considered as a target group or be treated differently.

One important question in marketing is that whether customers are equal or not. The answer to this question is obvious: “No”. Thus, how much is a customer worth? In order to answer this question, a concept, namely Customer Lifetime Value (CLV) in marketing was proposed. According to Jain and sing (2002) CLV for a firm is the net profit or loss to the firm from a customer over the entire life of transactions of that customer with the firm. In addition, CLV can be used in designing marketing programs (Reinartz & Kumar 2003; Rust et al., 2004). RFM models, probability models, econometric models, persistence models, computer science models, and diffusion/growth models are some of CLV models. Amongst different ones, RFM analysis is one of the famous and traditional customer evaluation metrics. It is a common approach for understanding consumer’s purchase behaviour. As the name explains, RFM stands for three KPIs, includes Recency, Frequency and Monetary or Money. It is quite desirable, especially in the retail industry (Tsipsis & Chorianopoulos, 2011). Furthermore, RFM segmentation has been applied for more than thirty years by direct marketers to target a subgroup of customers, decrease mailing costs and improve profit. Also, RFM is suitable to target marketing program at specific customers with the objective to improve response rates. Traditional RFM model cannot satisfy all needs of every industry and every business ought to use its own model. To deal with this, a firm can increase number of KPIs according to its needs and circumstances.

Recently, managers need to use more complicated tools applying huge amount of data to make more accurate decisions. A discipline which can extract the hidden and unknown information from abundance of data is Data Mining (DM). Amongst DM techniques, cluster analysis is widely used as a segmentation technique in many real problems. This is a convenient method to identify and define segments.

Decision making process frequently deals with discrete alternatives in the presence of different and often conflict criteria. This kind of decision making in Operations Research (OR)/Management Science (MS) literature is named Multiple Attribute Decision Making (MADM). Moreover, decision makers have widely recognized that most decisions made in the real world situations, because of their complexity, have vague and unclear constrains, and thus, the problem cannot be exactly defined or precisely represented in a crisp value (Bellman & Zadeh, 1970). To solve this kind of problems, Zadeh (1965) suggested employing the fuzzy set theory as a modelling tool for complex systems that can be controlled by humans but are hard to define literally. What is more, many recent decisions need to be made by a group of experts as they are inherently group decision making. The combination of fuzzy sets, MADM, and group decision making has led to a sub-discipline, namely, Fuzzy Group Multiple Attribute Decision Making (FGMADM). The present study aims to contribute to these subjects:

1. Creating an improved RFM model (based on traditional RFM);
2. Combining DM and FGMADM as a new hybrid model;
3. Using Fuzzy Group Step-wise Weight Assessment Ratio Analysis (FGSWARA) method to identify experts’ preferences in a group decision making environment with vague information;
4. Applying Fuzzy C-Means (FCM) clustering method to segment retailers;

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