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Key Findings and Analyses in Developing a Data-Driven Marketing Strategy

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Abstract

In this study, we aim to develop a data-driven and personalized retail marketing system based on the relationship between each product and its transaction behaviour. This research will further analyze the correlation between products' transaction histories and customer preferences to refine the personalized retailing system. We segment customer-purchasing behaviour using clustering to enable these characteristics in our retail marketing system. We used correlation analysis and experimental design to engineer and select features. Association rules were used to identify causal associations on a transaction dataset that had already been split based on quartile time horizon and customer-purchasing group. The Network Analysis revealed that the VIPs' transactions were more complex than the Potential Customers', meaning that the VIPs' patterns of purchases were more random, and the Potential Customers were grouped. Potential customer transactions are clustered into small groups, whereas VIP transactions are scattered. In Main Path Analysis, the products' core paths are plotted, and the biggest accumulative weight on the graph is eliminated, along with other insignificant associations. An association's critical path analysis determines the most important path. However, since we use historical data for empirical research, real-world datasets should be used to apply our findings for a comprehensive assessment.

Keywords
Marketing Strategy, Clustering, Association Rules, Network Analysis

Biographies

Angela Hsiang-Ling Chen teaches service quality and project management as an associate professor in the department of industrial and systems engineering at Chuang Yuan Christian University in Taiwan. Her research focuses on decision-making in transportation management, service industries, human resource management, logistics, and project management. Her present study is concentrated on three areas: sustainability in human capital management, CRM in public transportation systems, and retail distribution and channel management.

Yun-Chia Liang obtained his Ph.D. in Industrial and Systems Engineering from Auburn University (2001), his first MS in Mechanical Engineering (1996) from Carnegie Mellon University, and his second MS in Industrial Engineering (1999) from University of Pittsburgh. His areas of interest in study are optimization problems and the application of meta-heuristics. At Yuan Ze University in Taiwan, Republic of China, Dr. Liang presently holds the position of Professor in the Department of Industrial Engineering and Management. He belongs to both IEEE and IIE.

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