

Optimal Campaign Management Using Machine Learning Approaches

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***Abstract:** Studies conducted already in the '90's reveal that the use of celebrity as part of campaign management to endorse a product positively influences the purchasing intention of the consumer. These findings made it necessary to identify the celebrity characteristics required for promoting a given product in order to select the celebrity, from among those available, whose influence on the target audience would be the greatest. The choice of the celebrity to endorse a general product or a specific is still based on rule of thumb and, as a result, is likely to be mistaken. Moreover, there is researched evidence that shows that the celebrities who were found to be successful in the advertising of some specific brands, failed to promote others. This study is intended to resolve the existing situation by offering an innovative model for matching the celebrity to endorse a product. On the basis of the findings in the preliminary investigation that showed that consumers project some of the celebrity's attributes on to the product when making their choice, it was suggested that the product should be viewed as a compound of the product and the celebrity (hereinafter termed an "augmented product"), and the matching between the product and the celebrity should be viewed as a problem of designing the product to maximize its share of the market. We determined that the consumer's selection of products of high involvement are, "maximum utility" while the choice of products with low involvement are a "share of utility". In order to prove the validity of the model, we ran a conjoint study. In the framework of the study we gathered data of consumer preferences with regard to the augmented product. An interactive computerized questionnaire was distributed on the Internet to the participants in the study. We developed a genetic algorithm based on the data gathered from the questionnaire. This algorithm was found to be effective in spotting the optimal extended product among all the possible product combinations and even in comparison with most of the existing heuristic methods, including dynamic programming. The contribution of this study is expressed on two levels: on the theoretical level, by offering an innovative scientific model that sees the matching between celebrity and the promotion of the product as an issue of design of the augmented product (the product itself and the celebrity). On the implantation level, the results of the optimization of the model support the rule of thumb decisions of the advertising companies and even serve as a useful guide to these companies in looking for the characteristic of a celebrity and finding him.*