Distributional Matthew Effect in Consumer Choices

by

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Date: 5 September 2018 (Wednesday)
Time: 10:30 am - 12:00 noon
Venue: ISOM Conference Room 4047, LSK Business Building

Abstract: One simple way of summarizing univariate data is to bin the range of values and show the distribution of these values in a histogram. Such representation of data in histograms offers a more comprehensive view of data than simple summary statistics such as the mean and the variance. In the setting of online product ratings, many platforms use rating distribution charts to help consumers make better choices through a better understanding of the rating distributions. In this study, we argue that such distribution charts may inadvertently lead to a consumer-choice bias that we call the distributional Matthew effect (DME). Existing research in this field considers various descriptive statistics of rating distributions, such as the mean, variance, skewness, kurtosis, and even entropy and the Herfindahl-Hirschman Index. But real-world consumer decisions are often derived from visual perceptions about displayed rating distributions in the form of histograms. We propose a model of consumers’ tendency to pay too much attention to salient features of distributions in visual decision making. In a series of experiments, we identify DME’s significant impact on consumer preferences. We show that with DME, consumers make choices that violate widely accepted decision rules. In our experiments, subjects are observed to prefer products with lower average ratings and higher rating variances. They violate widely accepted modelling assumptions such as branch independence and may even prefer a first-order stochastically dominated distribution as a result of DME. Our study suggests how consumer-choice models should be refined to accommodate such visual decision biases.

Bio: Professor Michael Zhang is a Professor of Decision Sciences and Managerial Economics at the School of Business, Chinese University of Hong Kong. He holds a PhD in Management from MIT Sloan School of Management, an MSc in Management, a BE in Computer Science and a BA in English from Tsinghua University. Before joining the academia, he worked as an analyst for an investment bank, and as an international marketing manager for a high-tech company.

Professor Zhang’s research interests are on issues related to creation, dissemination and processing of information in business and management contexts. His works study pricing of information goods, online advertising, innovation and incentives, and use of artificial intelligence in financial markets. His research has appeared in premier academic journals such as American Economic Review, MIS Quarterly, Information Systems Research, Marketing Science, Management Science, Journal of Marketing, Journal of MIS, etc.

He has also been actively involved in professional services, including serving as a Senior Editor for Information Systems Research, an Associate Editor for Management Science, a Guest Associate Editor for MIS Quarterly. He is an independent director for NASDAQ-listed company Secoo and advised such organizations as Hong Kong Cyberport Entrepreneurship Center, Alibaba Group’s Lakeside (Hu Pan) University, Huawei, China Mobile, China Merchants Securities, Douban.com, and Radica Systems.