

Mining Customer Shopping Behavior: A Method Encoding Customer Purchase Decision Attitude

Hsiao-ping Yeh, Department of Marketing and Distribution Management, National Kaohsiung First University of Science and Technology, Kaohsiung, Taiwan

Tsung-Sheng Chang, Department of Information Management, Da-Yeh University, Changhua, Taiwan

ABSTRACT

Mining customer shopping data is able for business managers to understand and predict customer behavior. However, most practices are focusing on the purchasing goods, i.e. basket analysis. This article collects customer shopping data by observation to systematically discover customer shopping pattern incorporating with customer's purchasing decision time. With Apriori algorithm and the proposed customer purchasing decision pattern examining principle, customer purchase behaviors of with decision attitudes are revealed. This article gets insights at decomposing support and confidence values of an association rule. With the proposed encoding method, decision attitudes on goods in the association rule can be interpreted.

KEYWORDS

Apriori, Association Rule, Customer Shopping Behavior, Retailing

INTRODUCTION

Service industry is a business that most companies need to directly interact with customers. With the usages of information communication technology (ICT), companies enable to be close to their customers and understand their customers better than ever to promote customer satisfaction and loyalty. ICT adoptions become evitable deeds on service management in the 21st century. As Shahsavarani and Ji (2014) pointed out, ICT has enhanced a great deal of service improvement for service industry such as leveraging the surging river-like word-of-mouth flushed from social communities, or providing innovative and fun services with QR codes, mobile APPs, and augmented reality applications. These innovative applications indeed create high added-values for companies and for customers.

Big data mining nowadays has been widely adopted in businesses. The massive data collected from business transactions have made entrepreneurs realize to use the data for supporting their business decision making. The method mining customer shopping data incorporated with customer purchasing products with price and quantities is generally called market basket analysis. For example, with the usage of customers' purchase data and the product information, Brijs, Goethals, Swinnen, Vanhoof, and Wets (2000) and Nafari and Shahrabik (2010) mined out the potential customer purchasing behavior for marketing purposes and Liao, Wen, Hsian, Li, and Hsu (2014) evaluated product's

DOI: 10.4018/IJISS.2018010102

Copyright © 2018, IGI Global. Copying or distributing in print or electronic forms without written permission of IGI Global is prohibited.

future market value. In fact, applying data mining and suitable management method could help mass customization which is concerned with meeting the needs of an individualized customer market (Tien, 2006; Tirunillai & Tellis, 2014). The famous result is the diaper-beer rule in baskets. Benefits for retailers are better shelf management, goods supply, and market promotion. However, gaining more profits is the most important goal for retailers. Oliverira-Castro, Foxall, and Schrezenmaier (2005) investigated 80 retail shoppers in 16 weeks and found that they are most sensitive to prices of the goods. Discounts can always arouse customer's purchase desires on one hand, yet decrease retailer's profits on the other. Competition on prices is not the only and final answer. There must be other factors affecting customer's decision on purchases.

Except for customer demographics, Foxall (2007) stated that research regarding retail customer purchase decision better anchors on purchase factors affecting customer's decision criteria. Besides, Wells, Chang, Oliverira-Castro, and Pallister (2010) pointed that discovery of customer's purchase behavior and decision making contributes to correct market segmentation. For basket analysis, it has been caught attention by practitioners and researchers are product information such as product category, price, and quantity, i.e. POS (point of sales) data. However, other customer's shopping activities, such as shopping route, decision time of customer's putting a product into basket and whether the product is removed from basket, which are incorporated for mining customer shopping behavior are often neglected and believed by the authors that they can reveal more accurate customer retail behaviors. Freathy and O'Connell (2002) investigated airport travelers' sensitivity to time relating with their observed shopping attitude since the authors think that customers' purchase behavior and intention by observation would be more properly collected. Besides, Sinha and Uniyal (2005) and Tripathi and Tiwari (2015) also studied customer's in-store shopping manners by observation. The authors stated that observing customer's purchasing attitude incorporating with time effect is an appropriate data collection method. In short, although data analyses have been done on a daily basis in retail stores and service sectors, based on big data analyzing thinking, there is still a variety of data facts needed to be collected. Moreover, Mo, Li, Tian, and Tian (2015) mentioned, proper data encoding and digitalizing human variables would lead to efficient algorithm computation on solving particular social science problems. In a shopping center, a customer's decision time to put a product into her/his basket or the time she/he stalling at a certain product shelf is believed, in this study, to be an important data for retailers to take concern. The time effect at retailing scenes has been provided research evidences of influencing shoppers' purchase decisions. Park, Iyer, and Smith (1989) have stressed that when shoppers are compressed by shopping time, their product searching manners and final purchased products, product brands would be different comparing with who are not. Further, recently, Zushi, Curlo, and Thomas (2009) specified that time can provide an explanation of customer decision behaviors. Time seems to be a structured data; yet to customers, it is a poly-type one. McDonald (1994) stated that shopping time is an entire period of a customer taking actions from product search, delivery, to purchase. During this period, many interventions occur such as receiving a phone call, being stalled by an advertisement, taking a leave for answering the call of nature etc. While the duration time of interventions taken accompanied to analyze customer purchase decisions time, customer retail attitudes and behaviors can be multifold discovered (Nemati, 2003). There exists a retail store in about every 500 meters in Taiwan's city areas. According to Huang (2016), the sales reached \$11 billion in July 2016. With this such high rank in the dense of retail stores and retail consumption potential, Taiwan retailing businesses including many well-known international retailers such as Carrefour, Costco, 7-ELEVEN, are worthy to study the customer retail behaviors as well as the research methodology and findings are contributed to the retail business literature and provide practical implication.

Association rule (AR) data mining is a good scientific tool providing practical basket analysis implications (Aguinis, Forcum, & Joo, 2013); however according to Shaheen, Shahbaz, and Guergachi (2013) other than the explicit rule presentation, its further implicit meanings and denotations are still required researchers to explore. Otherwise, decision-making model of customer shopping have been

10 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage: www.igi-global.com/article/mining-customer-shopping-behavior/193038

Related Content

An Efficient Approach for Sending Identification Bit With the Help of Blowfish-RC6

Kailash Patidar, Damodar Prasad Tiwari, Priyanka Sharma, Karuna Nidhi Pandagre and Amit Kumar Shukla (2023). *Handbook of Research on Advancements of Contactless Technology and Service Innovation in Library and Information Science* (pp. 268-286).

www.irma-international.org/chapter/an-efficient-approach-for-sending-identification-bit-with-the-help-of-blowfish-rc6/325028

Enterprise Social Media: Ethnographic Research on Communication in Entrepreneurial Teams

Datis Khajeheian (2018). *International Journal of E-Services and Mobile Applications* (pp. 34-46).

www.irma-international.org/article/enterprise-social-media/196638

A Game Theoretic Method for Resource Allocation in Scientific Cloud

Amin Nezarat and Gh Dastghaibifard (2016). *International Journal of Cloud Applications and Computing* (pp. 15-41).

www.irma-international.org/article/a-game-theoretic-method-for-resource-allocation-in-scientific-cloud/144186

Innovation in Offer of Services for Manufacturing Enterprises: New Experiences Based on Emerging Technologies

Sergio Ricardo Mazini and Edmilson Ricardo Azevedo Novaes (2014). *Innovations in Services Marketing and Management: Strategies for Emerging Economies* (pp. 102-116).

www.irma-international.org/chapter/innovation-in-offer-of-services-for-manufacturing-enterprises/87965

Mobile Service Capabilities: Evidence from a Ghanaian Mobile Service Provider

Joseph Budu and Richard Boateng (2015). *International Journal of E-Services and Mobile Applications* (pp. 1-17).

www.irma-international.org/article/mobile-service-capabilities/127983