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Predicting the consumer's purchase intention of durable goods: An attribute-level analysis

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ABSTRACT

Recently, Retail 4.0 is progressively demanding the accurate prediction of consumer's purchase intention. In this regard, an attribute level decision support prediction model has been developed for providing an influential e-commerce platform to the customers. In order to build the prediction model, brands' social perception score and reviews' polarity are computed from social network mining and sentiment analysis, respectively. Afterward, an appropriate regression analysis and suitable instances have been identified for each attribute to predict the appropriate product attributes. One of the key findings, the camera attributes: sensor, display, and image stabilization pursue the customer attention at the end of the search. The outcomes of this analysis can be beneficial to e-commerce retailers and prepare an efficient search platform for the customers to obtain the desired durable goods in an adorable form. Finally, the sensitivity analysis has also been performed to test the robustness of the proposed model.

1. Introduction

Online shopping tendency is meritoriously boosting after the advent of bricks-and-mortar retailers. In the year of 2016, e-retailers have generated the estimated revenue of 1.9 trillion U.S. dollars (7.4% of total retail sales) from 1.61 billion customers globally. Amazon, the leading international e-retail company, has more than 310 million active customer accounts who bought near 136 billion U.S. dollars' goods in 2016 (Statista, 2017). In the first month of demonetization, the growth of digital payment in the world third purchasing power parity country (India) was escalated 271% and simultaneously the cash on delivery was dropped about 30–40% (Chronicle, 2017). Furthermore, out of the total online market, consumers approximately purchase 34% of durable goods (Sen, 2013). Thus, an analysis of online consumer's buying behavior of durable goods is a vital aspect in e-commerce market to represent the online shopping in an eloquent way.

Consumers conduct an extensive search before the purchase of durable goods. As per Bronnenberg, Kim, and Mela (2016), consumer searches camera on an average of 14 times before the purchase. Initially, they search the product based on their needs to gain experience and thorough screening of reviews is exercised by them before a confirmation of purchase. Later, a goal-oriented customer goes for the deeper search to extract the attribute level information and read the associated reviews to make a fruitful decision. Tracking the melody of

consumers' online purchasing behavior and storing it in a structural form is a stimulating work. ComScore is a US based leading company that does the job and stores it as comScore Panel Data. However, they have overlooked to store the consumers' screening reviews patterns in their database. In the recent era, an enormous amount of consumers online review data is turning into an interesting and valuable research area for exploring the influential factors in the digital marketing domain. People have given nearly 35 million online reviews up to March 2013 on a single retailer Amazon. It is found that they have increased the revenue of 2.7 billion dollars (Spool, 2009) after setting the question “Was this review helpful to you?” on each customers' review records. Investigating the effect of consumers review data for influencing the purchase intention is a crucial work for providing the prominent online purchasing platform to the customers. Brightlocal.com (BrightLocal, 2016) has found out that 84% of individuals trust the online reviews before purchase. Online reviews impact on consumers' confidence for purchasing a product as well as to provide the real-life experiences, whereas product company benefits from the product feedback to improve the quality of goods.

It is essential to explore the consumers' behavior on attribute level for durable goods. Particularly, the question “which search pattern, brand perception, and reviews data are responsible for influencing the consumers' choice?” has become an exclusive query of recent time in online shopping market. In the favor of raised query, different

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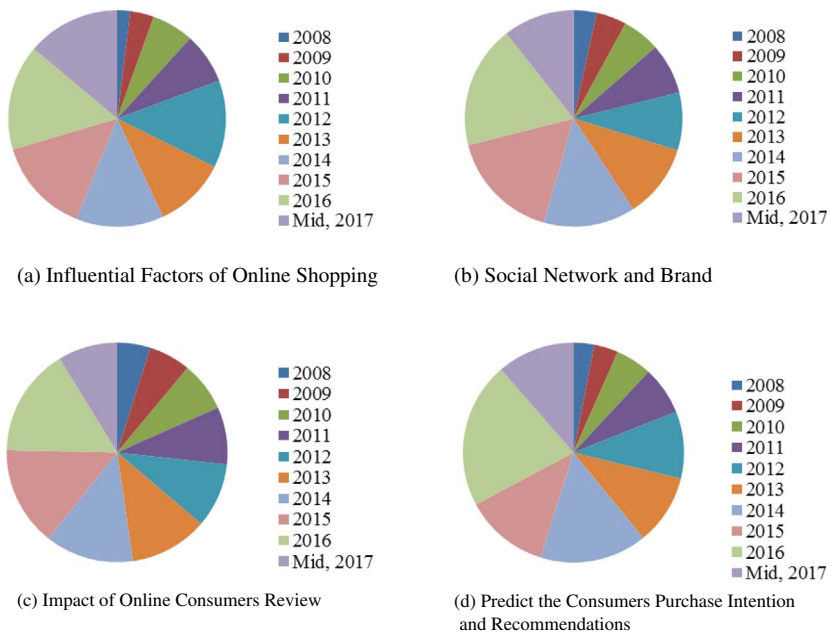


Fig. 1. Published articles in Scopus Indexed Journals.

influential factors have been categorized by many researchers in the past for purchasing an online commodity (Chen, Teng, Yu, & Yu, 2016; Malc, Mumel, & Pismanik, 2016). Social network enhances the consumers' perception on brand name (Godey et al., 2016) and also helps the customer to recognize new branded products. Furthermore, brand names impact the consumers' mind for selecting and the willingness to pay for an individual product (Lacroix & Jolibert, 2017; Lim, Kim, & Cheong, 2016). In this regard, the social perceptual score for the brand's eco-friendly and luxuries nature has been used in the proposed prediction model. Likewise, consumer online reviews influence the customer decision for buying goods (Banerjee, Bhattacharyya, & Bose, 2017) and assists the product company for forecasting the product sales (Fan, Che, & Chen, 2017). An in-depth observation has been carried out by using linear regression analysis for seeing the attribute level consumers' search and choice patterns (Bronnenberg et al., 2016). To address the aforementioned query, researchers investigated the consumers' search patterns, generated the social perceptual score (SPS) (Culotta & Cutler, 2016), and detected the influence of online reviews for purchasing goods. However, the combined effect of attribute level consumers' search and screening reviews patterns on purchasing products has not yet been explored. Further, social perception score is an important aspect in this recent era which should be incorporated in the brand prediction model. Our analysis considers the SPS and encounters its usefulness, and further investigates the joint effect of consumer online search and screening reviews on the purchase decision. According to our best knowledge, another limitation in the existing literature is that no one performed the regression analysis based on the linear and non-linear property of the attributes to deal with consumer buying behavior. However, it is observed that their diverse searching interests on distinct attributes vary with both the linear and nonlinear patterns in the collected data set. This issue has been addressed by simultaneously considering linear and nonlinear regression analysis based on the consumers' searching nature for the specific attributes.

The present research develops an attribute level prediction model to deal with four types of attribute level product selection strategies: (1) search to choose, (2) view reviews to choose, (3) search attributes with looking products' overall reviews to choose, and (4) search attributes with screening corresponding attribute's reviews to choose. Further, predicted attributes values are searched on products database to recommend the relevant products those customers desired to purchase. In the previous study, a number of researchers (Banerjee et al., 2017; Hsu,

Yu, & Chang, 2017) have considered the influence of consumers' review on purchasing products whereas they have overlooked the reviews which do not affect the customers' intention towards purchasing a product. For example, in this study, insights on the purchase of durable goods have been analyzed by considering digital camera and it is found that the purchase intention for the features Sensor and SLR are independent of customer reviews. This research is important for investigating which attributes and reviews are significant for changing the consumers' mindset towards purchasing any product. Furthermore, the total number of consumers' online search has been normalized to ten equal deciles and influential deciles for each attribute are clearly demonstrated to analyze the insights pertaining to attributes' characteristics.

Rest of the paper is organized as follows. In Section 2, background and related work are discussed in detail. The case description is shared in Section 3. Data collection approach with detailed data description is provided in Section 4. Further, Section 5 elucidates the proposed research methodology. The results of prediction graph, influential search deciles, and managerial insights are shown in Section 6. Finally, the paper is concluded with limitations and future extensions in Section 7.

2. Background and related work

A number of studies have been performed for analyzing the insights of online consumers buying behavior. However, only a few of them have addressed the customers buying behavior for durable goods. Still, an attribute-level prediction model with the integration of consumer search pattern, social perceptual score, and online reviews has not been addressed in the existing literature. By the critical examination of the background and related work, this paper classifies the literature into four subsections, (1) Influential Factors of Online Shopping, (2) Social Network and Brand, (3) Impact of Online Consumers Review, and (4) Predict the Consumers Purchase Intention and Recommendations. Fig. 1 shows the research growth of each classification. It seems that the research growth in the related domain is continuously booming markedly. The collection procedure of the records is followed by a simple technique. The keywords of each classification are searched on Scopus database with the constraint 'Article' in document type to collect the number of research articles published in Scopus indexed journals. The aim of this finding is just to show the importance of this research domain.

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