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UNDERSTANDING CUSTOMERS PERSPECTIVE ON DIFFERENT PRODUCTS- A TEXT MINING APPROACH

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ABSTRACT

Online customer reviews are becoming an important source of large scale product review data. The findings obtained from the comprehensive review of the existing research will be elaborated in this section. In this paper, we have reviewed many aspects of text mining approach by emphasizing on the customer review data. However, review studies lead with the perception that actual challenge is from the conventional use of customer surveys or focus group interviews that are usually costly and time-consuming while the size of available data is usually small scale as compared to the customer review data mining approach. The results of this review study showed that the efficiency of text mining techniques is improved on a large extent.

1.INTRODUCTION:

The accurate way of prediction of online review mining for e-commerce products is of great value to the customer and for product matching system. Mining the finely-grained aspect in reviews is a key indicator. It can effectively analyze the emotional tendency of online reviews and understand the advantages and disadvantages of evaluation objects (Xia & Yang, 2018). Recent research found that Amazon.com had over 10 million active customer reviews on all product categories (Chen & Xie, 2008). A study by Forrester Research reported that 50% of customers who visited retailer sites with customer review feedback indicated that customer reviews were important or extremely important in their purchasing decisions. This paper is organized as follows. Next section provided a brief motivation and background, which is followed by the next section that describes previous works closely related to the current research and finally leading to the conclusion of the review paper.

2. LITERATURE REVIEW

Kunz et al. (2017) has focused on the perspective of customer engagement and has emphasized the benefits of customer engagement to the firm. It was found during the study that customers' perspective was ignored to a large extent. This study attempts to emphasize the gap by proposing a strategic framework that aligns in terms of the customer and firm perspectives in successfully creating engagement that generates value for both the customer and the bottom line. In this, a strategic framework is proposed which include the necessary firm resources, timeline, data, process and aim for engagement, and captures customers' motives, situational factors and preferred engagement styles. The authors argue that the sustainability of data-driven customer engagement requires a dynamic approach and an iterative value generation process involving customers recognizing the value of engagement behaviors and firm's ability to capture and passing a value back to customers. This paper has proposed a dynamic strategic value-creation framework that comprehensively captures both the customer and firm perspectives to data-driven customer engagement.

Ebastianelli & Tamimi, (2018) in their research study has reported the results based on the experimental study designed to better understand the role of online product reviews, in terms of valence and volume, and online trust during a consumer's exploratory stage with an e-tailer within the context of simultaneously varying product type and e-tailer reputation. During the survey, participants took part in a conjoint task that involved with viewing fictitious web pages and indicating their trust level of trust in using the site to purchase the product displayed. Conjoint models are estimated for determining the relative influence of each attribute on trust perceptions, signifying on the two-way interactions among the four attributes. Study results revealed that e-tailer reputation has the greatest impact on the making of initial trust perceptions, which is followed by the summary review star rating of the product. Significant two-way interactions have shown that a large number of reviews can enhance the effect of a positive review on trust while shopping for high priced experience products reduces the positive influence of e-tailer reputation. The effect of these attributes on trust perceptions is less for those with higher levels of prior online experiences. A significant interaction among the summary of product star rating and a number of reviews has indicated that online review data volume may be more important in order to perceive the e-tailer trustworthiness than earlier studies suggest.

2.1 Information Extraction and Information Retrieval

Heng et al. (2018) conducted research to understand the factors that influence consumers' online food purchases. Using a topic modeling approach, results have shown that four interpretable factors have made a significant impact on the helpfulness of customer reviews: Amazon Service, Flavor Feature, Physical Feature, and Subjective Expression. It was found that customer reviews have perceived objective reviews as more helpful as compared to subjective reviews. In addition, customer review helpfulness has a concave relationship with the length of the reviews. The results provided with the important business implications on how to encourage more helpful reviews to assist potential shoppers in making better purchase decisions.

Within the field of the emerging context of web 2.0 social media, as per Ngo-Ye & Sinha (2012), the online customer reviews are playing an important role in the dissemination of information, promoting commerce and facilitating trust, in the e-marketplace. The sheer volume of customer reviews on the web produces information overload for readers. Developing a system that can automatically identify the most helpful reviews would be valuable to businesses that are interested in gathering informative and meaningful customer feedback. Because the target variable—review helpfulness—is continuous, common feature selec tion techniques from text classification cannot be applied. In this article, a text mining model was proposed using the Regressional ReliefF (RReliefF) feature selection method, for predicting the helpfulness of online reviews from Amazon.com. We find that RReliefF significantly outperformed the two popular dimension reduction methods. This study has investigated and compared different dimension reduction techniques in the context of applying text regression for predicting online review helpfulness. Another contribution is that analysis of the keywords selected by RReliefF revealed meaningful feature groupings. The empirical results showed that RReliefF significantly outperforms BOW and LSA models. A theoretical explanation was obtained for the RReliefF works well in this domain. RReliefF helps to filter out the distractions and improves both regression performance and computational efficiency. The keywords selected by RReliefF leading to meaningful feature subgroups emerged in the process. One cluster of keywords convey positive or negative sentiment, while another group of keywords is related to the different levels

of the topic in the domain. They built currently text mining models with only review words. However, other aspects of review text, such as writing style and readability, may also play a role in predicting review helpfulness.

Another study demonstrates the unique importance of online review positiveness and review score inconsistency in increasing product sales which vary for low and high active products. Two different datasets of online consumer reviews of ow and high involvement products (i.e., musical instruments and digital music, respectively) and their associated sales ranks were obtained from Amazon.com (Eslami & Ghasemaghaei, 2018). To extract sentiments, a document-based sentiment analysis technique was used. The findings reveal that for high involvement products, review text sentiment, review score and review score inconsistency impact product sales, while for low involvement products, review title sentiment, and review score impact product sales (Eslami & Ghasemaghaei, 2018).

Ahmad & Dang, (2014) has provided with a detailed overview based on the concepts of the text mining techniques namely information extraction and information retrieval. This paper has provided a comparison table of both these techniques on the basis of characteristic and their relationship to each other. We have also underlined those interesting research challenges that led to the benefit of managing the extracted valuable information. This study has emphasized the main role of information extraction in terms of retrieval context in future to be played. There are much prospective research area in this filed to give better performance and accuracy in retrieving or extracting the valuable information from various resources. Combing a domain knowledge base with a Despite the popularity of online food and grocery shopping, little research has been conducted to understand the factors that influence consumers' online food purchases. Using a topic modeling approach, our results show four interpretable factors have significant impacts on the helpfulness of customer reviews: Amazon Service, Physical Feature, Flavor Feature, and Subjective Expression. Readers of customer reviews perceive objective reviews as more helpful than subjective reviews. In addition, customer review helpfulness has a concave relationship with the length of the reviews. Our results provide important business implications on how to encourage more helpful reviews to assist potential shoppers in making better purchase decisions. text mining engine would improve its efficiency, especially in the information retrieval and information extraction.

Tucker & Kim (2011) presented a robust framework to enrich a new product by dynamically capturing customer preference trends. This framework autonomously captures customer preference trends from publicly available product review data which is abundantly available but grossly underutilized. The method is overcome with a major challenge that has plagued the product design community due to the lack of large scale, realistic customer data and its meaningful interpretation to guide the new product design process. The framework is composed of three steps – retrieval of customer review texts, mining of product feature texts, and prediction of the future trend of product preference. The method is proposed where it transforms the unstructured customer preference data into a time series representation of product feature preferences. Although the primary focus is on consumer electronics, the proposed methodology can be extended to other engineering fields such as automotive design, logistics, aviation etc.

3. COMPARISON TABLE:

This section will provide a tabulated form of the existing studies with respect to the techniques used, merits, and limitations.

S.No	Paper Title	Research Gap	Research Findings
1.	Customer engagement in a big data world. Journal of Services Marketing, 31(2), 161-171 (Kunz, W., Aksoy, L., Bart, Y., Heinonen, K., Kabadayi, S., Ordenes, F. V., ... & Theodoulidis, B. (2017).	Need more generalized scope of the result.	The dynamic strategic value-creation framework that comprehensively captured both the customer and firm perspectives.
2.	E-tailer website attributes and trust: understanding the role of online reviews. Online Information Review, 42(4), 506-519. (Sebastianelli, R., & Tamimi, N. (2018).	Need to consider broad aspects by considering a large variety of data sets.	Able to estimate interaction effects between summary product star rating and the number of reviews.
3.	A Comparative Study on Text Mining Techniques. International Journal of Science and Research, ISSN, 2319-7064. (Ahmad, P. H., & Dang, S.)	Challenges but need to be more detailed focused on different areas.	Provided a detailed overview of the conceptual form of two text mining techniques namely information retrieval and information extraction
4.	Exploring hidden factors behind online food shopping from Amazon reviews: A topic mining approach. Journal of Retailing and Consumer Services, 42, 161-168. (Heng, Y., Gao, Z., Jiang, Y., & Chen, X. 2018).	Nil	The results provided with the important business implications on how to encourage more helpful reviews to assist potential shoppers in making better purchase decisions.
5.	Analyzing online review helpfulness using a regressional ReliefF-enhanced text mining method. ACM Transactions on Management Information Systems (TMIS), 3(2), 10. (Ngo-Ye, T. L., & Sinha, A. P. 2012).	The validity of the findings on larger datasets and other review domains such as electronic products, restaurants and hotels.	Propose and investigate a text mining model, enhanced using the Regressional ReliefF (RReliefF) feature selection method,
6.	Predicting emerging product design trend by mining publicly available customer review data. In *DS 68-6: Proceedings of the 18th International Conference on Engineering Design (ICED 11), Impacting Society through Engineering Design, Vol. 6: Design Information and Knowledge, Lyngby/Copenhagen, Denmark, 15.-19.08. 2011.* (Tucker, C., & Kim, H. (2011).	The challenge is from conventional and prevalent use of customer surveys or focuses group interviews that are usually costly and time-consuming while the size of available data is usually small scale.	They aim to expand on the proposed online trend mining research by developing demand models for next-generation products based on the time series customer review data.

Table: Comparison Table

4. CONCLUSION

This paper presents a review of the different techniques under the text mining approach adopted for understanding the customer's perspective on various products. The various methods adopted by various researchers include a dynamic strategic value-creation framework that comprehensively captured both the customer and

firm perspectives, text mining model for enhancement using the Regressional ReliefF (RReliefF) feature selection method, demand models for next-generation products based on the time series customer review data. This study attempts to emphasize the research gaps that may hamper future advancement in the field of text mining. The study attempts to form a successful value generation including a strategic framework that aligns in terms of the customer and firm perspectives with the successful value generation for both the customer and the bottom line. In this, a study on the various strategic frameworks proposed by various existing researchers was included in terms of necessary firm resources, timeline, data, process and aim for engagement, and capturing customers' attention and situational factors with preferred engagement styles. From the findings and discussions, it could be demonstrated that some application and challenges of text mining techniques needs to be reduced for future prospects as compared to the adopted conventional techniques. It is found that there are many perspectives of the researchers with respect to better performance in retrieving customer generic information from various text mining resources.

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