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Investigating and analyzing consumer behavior through social media analytical models to improve reverse logistics decisions.

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Abstract

The aim of this research is to present a study and analysis of consumer behavior through social media analytical models to improve reverse logistics decisions. The research method is fundamental and applicable research in terms of its purpose, and descriptive-survey in terms of research method. The statistical population of the study is SAMSUNG mobile phone users. To analyze the findings, first programming for social media data through word labeling using LAD, word stemming with Porter STEMMER, data feature identification, and in the case of website and Instagram data; entity identification with NER, stop word removal, latent dirichlet thematic modeling, word classification based on determined keywords, and finally analyzing the sentiments of SAMSUNG mobile phone users with the Naive Bayes algorithm was carried out. The findings showed that sentiment analysis has a positive effect on reverse logistics decisions. By providing real-time insight into customer sentiment, it helps managers and decision makers identify potential issues and facilitate rapid resolution. In addition, sentiment analysis helps predict demand, increase resource allocation, and improve overall operational efficiency. By incorporating sentiment analysis into the reverse logistics decision-making process, organizations can gain a competitive advantage by understanding and responding appropriately to customer sentiment.

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Extended Abstract

Introduction

Anything that allows users to participate, create, and share information from anywhere is a social media (Berthon et al., 2012). Looking at the breadth of research conducted in various sciences, the importance and role of social media in various product-oriented and service-oriented industries cannot be denied (Garant, 2017), because this platform directly and indirectly affects user behavior or the way they make decisions (Schivinski & Dabrowski, 2016). Today, users' interactive behaviors on social media have become an important source and influence on marketing activities in various businesses.

The availability of interactive tools such as mobile phones, tablets and personal computers, along with the wide variety of social media, has made it possible to make user experience and information available to others in the shortest possible time. Companies (or organizations) obtain this information through the most important competitive analysis techniques in social media, including text mining, trend analysis, sentiment analysis, opinion analysis and visualization techniques, which are used to discover hidden concepts and patterns in large volumes of data (Kim et al., 2016). Collecting data on social media and analyzing data to help decision makers address specific problems refers to social media analytics (Lee, 2019).

In the era of information and electronic communications, all mobile phone manufacturing companies are also subject to challenges such as changing customer expectations, expanding competition, technological advances, and extensive economic, social, demographic, cultural, etc. developments, and must choose strategies to continue their lives in turbulent markets. The huge popularity of social media, especially mobile phones, in recent years has attracted more attention from society and, with the large volume of user-generated content, including their opinions, feelings, and experiences, has become one of the most important and up-to-date sources of information for manufacturers, suppliers, consumers, and other active factors in the economy and industry, and has brought new opportunities and challenges to organizations (Kim et al., 2016; Zarco et al., 2019). Social network analysis and big data confront today's digital world with issues that it has not encountered before. The influx of information allows businesses to better understand customer behavior and purchasing patterns. However, the benefits of big data go beyond these issues and can help scientists solve global issues (Talón et al., 2018). With the growing world population and ever-increasing technologies, more electronic devices are being produced than ever before (Balde et al., 2017) and recently, more than 145,000 tons of natural resources - some of which are very scarce - are consumed each year to produce mobile phones (Statista, 2020). Considering the above, the main research question is as follows: How can consumer behavior analysis through social media analytics models improve reverse logistics decisions?

Theoretical Framework

Social Media

Social media are websites and services that shape users' social connections in the form of user-generated content; they are sharing their content in small and large groups (Marwick & Boyd, 2014).

Reverse Logistics

Reverse logistics is the process by which manufacturers receive their previously shipped products from end consumers or recipients for re-sending to another customer, recycling, remanufacturing, repair, or disposal. The principles of reverse logistics will increase customer service and loyalty, restore the value of assets faster, improve customers' mental image of the

brand, better communication with shareholders, increase personal motivation, and ultimately achieve the organization's sustainable vision and goals (Eidi & Rezaei, 2017).

Mohades deilami et al. (2021) studied the presentation of an intelligent model for multi-faceted recognition of user personality using deep learning methods. They combined the sand convolutional neural network with the Adabost model for data classification so that they could classify the experimental data that were classified with errors in the second stage of classification with higher accuracy by assigning an alpha coefficient. The proposed model was tested on two datasets, ISIS and YouTube; and based on the results obtained, the proposed model has higher accuracy than other existing methods on both datasets.

Mohammadi & Khalaj (2021) studied the presentation of a model for opinion mining at the document feature level for hotel user reviews. The results showed that the proposed method performed better than the basic methods based on sentiment dictionaries on this dataset, and the accuracy, precision, recall, and F-criterion evaluation criteria using the proposed method were 65, 94, 53, 94, 89, 93, 17, and 95, respectively. The diversity of ways in which customers engage with brands through social networks has become a challenge for brand managers; such as how social networks are used with a strategic approach and how much content should be produced so that company-customer interactions lead to value creation for the organization.

Research Methodology

The research method is fundamental and applicable in terms of research method, and descriptive-survey. The statistical population of the study is: SAMSUNG mobile phone users.

Research Findings

To analyze the findings; first, by programming for social media data through word tagging using LAD, word stemming with Porter STEMMER, data feature identification, and in the case of website and Instagram data; entity identification with NER, stop word removal, Latent Dirichlet thematic modeling, word classification based on determined keywords, and finally analyzing the sentiments of SAMSUNG mobile phone users with the Naive Bayes algorithm was carried out. The findings showed that sentiment analysis has a positive effect on reverse logistics decisions. By providing real-time insight into customer sentiments, it helps managers and decision makers identify potential issues and facilitate quick resolution. In addition, sentiment analysis helps to predict demand, increase resource allocation, and improve overall operational efficiency. By incorporating sentiment analysis into the reverse logistics decision-making process, organizations can gain a competitive advantage by understanding and responding appropriately to customer sentiment.

Conclusion

The present study aimed to provide a review and analysis of consumer behavior through social media analytical models to improve reverse logistics decisions. The results of this study are consistent with the results of Shahsavandi et al. (2025), Mashhadizadeh et al. (2024), Ghanbarian et al. (2023), Hahighhinia et al. (2021), Malekakhlagh et al. (2021), Mohades deilami et al. (2021), Mohammadi & Khalaj (2021), Ahmadi et al. (2020), Abdul Waheed et al. (2019), Zhang et al. (2019), and D. Xue et al. (2018). Hahighhinia et al. (2021) showed that a number of units were jointly efficient by implementing the CCR and BCC models at the levels of organizational activity and audience response; but other units were also identified as efficient by implementing the BCC model. Then, using hyperefficiency analysis, the efficient units were ranked. Finally, inefficient units in each of the social networks are identified and

appropriate strategies are proposed to improve the performance of the inefficient units. This model will help media managers to identify their inefficiency compared to competitors and become an efficient unit.