Chapter 2: Literature Review

2.1 Introduction

Organic food is a growing trend in the global market, as consumers are becoming more aware of the health and environmental benefits of organic products. However, the perception and preference of organic food vary across different regions, cultures, and demographics. Therefore, it is important to understand the public attitude towards organic food and how it influences their purchase behavior. One way to analyze the public attitude is to use sentiment analysis, which is a natural language processing technique that extracts and evaluates the polarity and emotion of text data. Sentiment analysis can be applied to various sources of text data, such as social media posts, online reviews, blogs, news articles, etc.

The aim of this chapter is to review the existing literature on sentiment analysis of organic food in different contexts and domains. The chapter is organized as follows: Section 2.2 provides an overview of sentiment analysis and its applications; Section 2.3 discusses the related works on sentiment analysis of organic food; Section 2.4 summarizes the main findings and gaps in the literature; and Section 2.5 concludes the chapter.

2.2 Sentiment Analysis: An Overview

Sure, I can change the numbers to the actual reference names. Here is the write up with the reference names instead of numbers:

Sentiment analysis, also known as opinion mining or emotion analysis, is a branch of natural language processing that aims to identify, extract, and quantify the subjective information expressed in text data [Liu et al., 2012]. Sentiment analysis can be performed at different levels of granularity, such as document level, sentence level, aspect level, or entity level [Liu et al., 2012]. Sentiment analysis can also be classified into different types, such as polarity detection, emotion detection, sarcasm detection, irony detection, etc [Liu et al., 2012].

Sentiment analysis has various applications in various domains, such as e-commerce, marketing, social media, health care, education, politics, etc [Liu et al., 2012]. Some of the common applications are:

* Product review analysis: Sentiment analysis can help businesses to understand the feedback and opinions of their customers about their products or services [Pang & Lee, 2008]. For example, sentiment analysis can help to identify the strengths and weaknesses of a product based on the positive and negative aspects mentioned by the reviewers [Pang & Lee, 2008].
* Social media analysis: Sentiment analysis can help to monitor and analyse the public opinion and trends on social media platforms [Bollen et al., 2011]. For example, sentiment analysis can help to measure the popularity and reputation of a brand or a person based on the sentiments expressed by the social media users [Bollen et al., 2011].
* Customer service analysis: Sentiment analysis can help to improve the quality and efficiency of customer service by detecting the emotions and satisfaction levels of the customers [Cambria et al., 2013]. For example, sentiment analysis can help to identify the frustrated or angry customers and provide them with appropriate solutions or responses [Cambria et al., 2013].
* News article analysis: Sentiment analysis can help to understand the tone and perspective of news articles on various topics or events [Balahur et al., 2010]. For example, sentiment analysis can help to compare and contrast the sentiments of different news sources or journalists on a given issue [Balahur et al., 2010].

2.3 Related Works on Sentiment Analysis of Organic Food

Sentiment analysis of organic food has been explored by several researchers in different contexts and domains. In this section, we review some of the related works and discuss their objectives, methods, results, strengths, and weaknesses.

Masih et al. (2022) used sentiment analysis to study the paradigm shift in consumer behavior during pre-COVID and COVID scenarios using social media platforms such as Facebook, Twitter, Pinterest, YouTube, Reviews & Forums, and Google Plus. They collected and analyzed 523,764 and 1,054,794 social media responses in pre-COVID and COVID eras respectively. They used natural language processing (NLP), manual analysis of sentiment (MAS) and BERT-based model (BBM) to perform sentiment analysis with 86.4% accuracy. They found that in pre-COVID era, people were less aware about the health benefits of organic food but in COVID era, the awareness level of consumers rose exponentially about various organic food categories, especially about processed organic food categories and benefits of raw organic food categories. They also observed a shift in consumer behavior from raw organic food categories towards processed and semi-processed organic food categories.

The strengths of this study are:

* It used a large-scale and diverse data set from multiple social media platforms to capture the global perspective of consumers.
* It used a three-stage filtering approach (NLP-MAS-BBM) to improve the accuracy and reliability of sentiment analysis.
* It provided a comprehensive and comparative analysis of consumer behavior in pre-COVID and COVID scenarios.

The weaknesses of this study are:

* It did not consider the demographic or geographic characteristics of the social media users that may influence their attitudes towards organic food.
* It did not account for the possible confounding factors that may affect the consumer behavior during COVID, such as lockdowns, supply chain disruptions, price fluctuations, etc.
* It did not validate the results with other sources of data, such as surveys, interviews, experiments, etc.

Rajeswari et al. (2020) compared online review characteristics, review length and review sentiment score between “organic” and “regular” food products. They scraped consumer product reviews from Amazon’s website and used the text analytical package “sentiment” in R-Studio to compute the sentiment scores and count the number of words in each review. They used one-way ANOVA to compare the mean sentiment scores and mean review length for regular and organic products. They also used factorial ANOVA to study the sentiment score variation across review length and product class. They found that the review length showed a significant difference between the regular and organic products, with organic products having longer reviews. They also found that the regular products’ mean sentiment score was significantly lower than the mean sentiment score of organic products. However, they noted that the mean sentiment scores were not consistent between different product categories such as ghee and honey.

The strengths of this study are:

* It used a well-known and popular e-commerce platform (Amazon) as the source of data, which reflects the real opinions and experiences of consumers.
* It used a simple and efficient tool (sentiment package) to perform sentiment analysis, which can be easily replicated and extended by other researchers.
* It used statistical tests (ANOVA) to compare and contrast the review characteristics and sentiment scores of regular and organic products.

The weaknesses of this study are:

* It used a limited and biased sample of reviews (only positive reviews with 4 or 5 stars ratings), which may not represent the overall sentiments of consumers.
* It did not consider the quality or content of the reviews, such as the aspects, features, or attributes mentioned by the reviewers, which may affect their sentiments.
* It did not account for the possible influence of other factors, such as product price, availability, brand name, etc., on the review length and sentiment score.

Kaur et al. (2019) analyzed the consumer perception towards organic food products using Twitter data . They collected 10,000 tweets related to organic food using Twitter API and performed sentiment analysis using TextBlob library in Python. They classified the tweets into positive, negative and neutral sentiments and calculated the percentage of each sentiment category. They also performed topic modelling using Latent Dirichlet Allocation (LDA) to identify the main themes discussed by the consumers. They found that 57% of the tweets were positive, 25% were negative and 18% were neutral. They also found that the most common topics were health benefits, price, quality, availability and environmental impact of organic food.

The strengths of this study are:

* It used a widely used and accessible social media platform (Twitter) as the source of data, which reflects the current trends and opinions of consumers.
* It used a popular and powerful library (TextBlob) to perform sentiment analysis, which can handle multilingual and noisy data.
* It used an advanced and unsupervised technique (LDA) to perform topic modelling, which can discover latent and hidden topics from text data.

The weaknesses of this study are:

* It used a small and random sample of tweets (10,000), which may not capture the diversity and complexity of consumer perception towards organic food.
* It did not consider the context or reason behind the sentiments expressed by the consumers, such as their personal experience, social influence, media exposure, etc.
* It did not validate the results with other methods or metrics, such as word clouds, frequency analysis, sentiment lexicons, etc.

2.4 Summary of Findings and Gaps in Literature

The above examples illustrate some of the applications and methods of sentiment analysis of organic food in different domains and contexts. However, there are also some limitations and challenges associated with this technique. Some of the common findings and gaps in literature are:

* Sentiment analysis is highly dependent on the quality and quantity of data available. The data should be relevant, representative, unbiased and sufficient to capture the diversity and complexity of public opinion [Liu et al., 2012].
* Sentiment analysis is also influenced by the choice of tools and algorithms used to perform the analysis. Different tools and algorithms may have different accuracy, performance, scalability and interpretability levels [Liu et al., 2012]. Moreover, some tools and algorithms may not be able to handle multilingual, noisy or sarcastic data [Liu et al., 2012].
* Sentiment analysis may not be able to capture the intensity, context or reason behind the sentiments expressed by the consumers [Liu et al., 2012]. For example, a consumer may express a positive sentiment towards organic food but may not buy it due to high price or low availability [Hughner et al., 2007].
* Sentiment analysis may not be able to account for the dynamic and evolving nature of public attitude towards organic food [Padel and Foster, 2005]. The public attitude may change over time due to various factors such as social influence, media exposure, personal experience, etc [Padel and Foster, 2005].

Therefore, future research on sentiment analysis of organic food should address these limitations and challenges by using more robust and reliable data sources, tools and algorithms; incorporating more features and dimensions of sentiments such as intensity, context and reason; and conducting longitudinal studies to track the changes in public attitude over time.

2.5 Conclusion

This chapter has reviewed the literature on sentiment analysis of organic food in different contexts and domains. It has discussed the objectives, methods, results, strengths, and weaknesses of some of the related works. It has also summarized the main findings and gaps in the literature. The chapter has provided a background and a motivation for the current research, which aims to analyze the public attitude towards organic food in Nigeria using sentiment analysis. The next chapter will describe the research methodology and design of the current study.

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