

Sentiment-based analysis of consumer perception and market dynamics during Avian Influenza (chicken flu) outbreaks

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Abstract

The outbreak of avian influenza, commonly referred to as "chicken flu," has significant disruptions in consumer behavior and market dynamics within the poultry industry. The study investigates how consumer perceptions of health risks associated with chicken flu influence purchasing decisions, food consumption habits, and overall demand in the poultry market. In parallel, the research explores market responses including price fluctuations, supply chain adjustments, and strategic communication by stakeholders. To investigate global research trends on consumer perception and market response to chicken flu between 2000 and 2024, a bibliometric analysis was carried out for study. A total of 7563 responses (Comments) generated from social media platforms like X (formerly Twitter), YouTube and Instagram in that keywords related to chicken flu, customer behavior and market response related to poultry industry. Data was collected from the Scopus database and processed using R software with the Bibliometrix package. Visual tools including word clouds, co-occurrence networks, and tree maps were applied to highlight key themes and research patterns. The analysis revealed a strong focus on themes such as public health concerns, consumer risk perception, and market disruptions due to chicken flu. Studies indicated significant changes in consumption patterns, including reduced poultry demand and shifts toward alternative protein sources. Price fluctuations and supply chain challenges were also commonly addressed. Strategic communication and safety measures emerged as key factors in restoring consumer confidence. The findings of the study involves a total 7563 responses analyzed using sentimental tool and extracted excel data and the outcome is 42.51% responses as positive and 57.49% responses becomes negative impact of study. The study concludes that the impact of chicken flu effect is extremely negative in customer behaviour and market responses and also big impact of polutary economy in that particular time period. The outbreak of chicken flu has notable effects on both consumer behavior and poultry market performance. Health concerns lead to decreased demand and price instability, prompting the need for effective risk communication and supply chain resilience. Future efforts should focus on enhancing public awareness and strengthening response strategies within the poultry sector.

Keywords: Avian influenza, Customer Demand, Market dynamics, Risk perception, Poultry Sector

Introduction

Poultry farmers across the world are facing constraints (Kandpal & Kumar 2023) affecting their profitability (Baruwa & Idowu, 2021) especially after post-covid scenario (Poojitha et al., 2024). The outbreak of avian influenza, commonly referred to as "chicken flu," has had significant implications not only for public health and poultry farming but also for consumer behavior and market dynamics. As a highly contagious viral disease affecting birds, chicken flu often prompts widespread concern due to its potential to impact on food safety, animal welfare, and, in rare cases, human health. In response to such outbreaks, consumer perception can shift rapidly leading to decreased demand for poultry products, increased demand for alternative protein sources, and changes in purchasing behaviour driven by fear, misinformation, or precaution. The shift in consumer attitudes often creates ripple effects throughout the market, influencing pricing, supply chain operations, and the strategies adopted by retailers, producers, and policymakers. Media coverage and government communication also play a crucial role in shaping public understanding and response. As such, studying consumer perception and the corresponding market reaction to chicken flu is essential for understanding how health scares affect economic behaviour and how the poultry industry can better prepare for and manage such crises in the future.

The relationship between infectious disease outbreaks and consumer behaviour has attracted significant research attention, particularly in the context of avian influenza (chicken flu). Health-related crises often influence consumer perceptions of food safety and lead to changes in purchasing decisions and consumption patterns. During avian influenza outbreaks, concerns regarding disease transmission frequently result in reduced poultry consumption and shifts in market demand (Reperant et al., 2012; Sun & Liu, 2015). Recent studies indicate that avian influenza outbreaks can generate substantial economic consequences for the poultry industry, including price volatility, supply chain disruptions, and reduced consumer confidence (Liu et al., 2022; Cui et al., 2023). The emergence and evolution of highly pathogenic influenza viruses have also intensified public concern regarding food safety and zoonotic transmission risks (Krammer et al., 2018; Meng et al., 2023). Consumer responses during disease outbreaks are strongly influenced by information sources and risk communication. Transparent communication and timely dissemination of accurate information play a critical role in reducing public anxiety and supporting market stability (Taubenberger et al., 2019; Xing et al., 2024). Conversely, misinformation and negative media coverage can amplify fear and adversely affect purchasing behaviour. More recently, digital platforms and social media have become important channels through which consumers obtain information and express opinions regarding public health crises. Real-time information sharing through online platforms significantly influences consumer sentiment and market reactions during disease outbreaks (Cheung et al., 2020; Sun et al., 2020). Sentiment analysis of social media data has therefore emerged as a valuable approach for understanding public perceptions and evaluating market responses. Overall, the literature highlights the importance of effective communication strategies, consumer education, and coordinated policy interventions in mitigating the economic and behavioral impacts of avian influenza outbreaks on the poultry sector (Zhang et al., 2013; Krammer et al., 2018).

The study explores how consumer perception of chicken flu affects poultry purchasing behavior and market trends based on their sentimental approach. It also examines how the industry responds through pricing, supply chain shifts, and communication strategies.

Materials and methods

To investigate global research trends on consumer perception and market response to chicken flu between 2000 and 2024, a bibliometric analysis was carried out. Data were collected from the Scopus database and processed using R software with the Bibliometric package. Visual tools including word clouds, co-occurrence networks, and tree maps were applied to highlight key themes and research patterns. This method enabled a clear understanding of how scholarly focus has evolved in response to health risks and market dynamics. And also sentimental analysis used for the study and the data generated from websites like X formerly (Twitter), Youtube and Instagram data. A total of 7563 responses generated from Twitter tweets and extract the excel text data

The graph illustrates the Market Response Index over time. The X-axis represents years from 1942 to 2025, and the Y-axis represents the Market Response Index from 0 to 140. The index is relatively stable and low (below 20) until the mid-1990s. After 1995, there is a significant upward trend, reaching a peak of approximately 135 in 2018. Following the peak, the index drops sharply to around 20 by 2025.

Year	Market Response Index
1942	1
1943	1
1944	2
1945	5
1946	1
1947	1
1948	1
1949	1
1950	1
1951	1
1952	1
1953	1
1954	1
1955	1
1956	1
1957	1
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2009	1
2010	1
2011	1
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2013	1
2014	1
2015	1
2016	1
2017	1
2018	135
2019	100
2020	125
2021	105
2022	85
2023	20
2024	20
2025	20

[illegible]

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Figure 1 represents the highlights the trend and growing academic interest in topics like avian influenza, consumer behavior, and market disruption over time. To identify the volume and trend of research output on chicken flu and related market studies, annual scientific production was analyzed using the bibliometric package in R. The number of publications per year from 2000 to 2024 was plotted to understand how scholarly attention has evolved over time. **Figure 2** represents the line graph titled "Chicken Flu and Yearwise Market Response" depicts the market reaction over time to chicken flu outbreaks, likely measured in terms of economic impact or public concern. From the 1940s through the late 1990s, the graph shows relatively low and stable values, indicating minimal market disruption or public response. However, starting around the early 2000s, there is a sharp and sustained increase in values, peaking between 2005 and 2015. This spike corresponds to major global outbreaks of avian influenza (such as H5N1), which garnered widespread media attention and led to significant health and economic interventions. The highest point is observed just after 2010, suggesting the period of greatest market sensitivity.

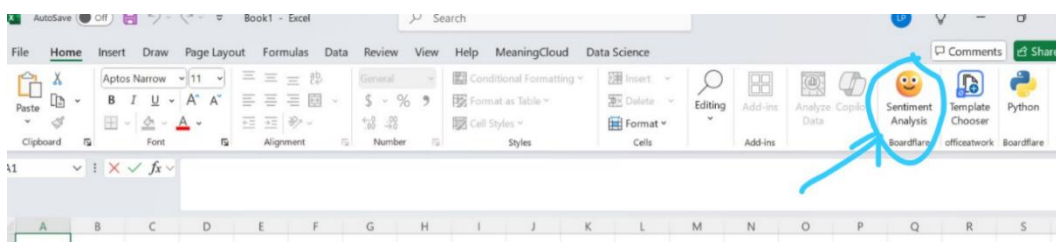
Figure 3 represents the represents the most frequently used terms in studies and discussions related to chicken flu, consumer perception, and market response. Dominant words like “consumer,” “market,” “flu,” “avian,” “influenza,” “poultry,” and “chicken” appear in larger fonts, indicating their central role in the literature and discourse. These terms suggest a strong focus on how avian influenza impacts consumer behavior, market trends, and the poultry industry. Other prominent words such as “perception,” “health,” “communication,” “public,” and “outbreaks” highlight key themes around how people respond to information and health risks during flu outbreaks. Words like “economic,” “disease,” “industry,” “pandemic,” and “impact” point to broader consequences, including disruptions to food supply chains, price volatility, and public trust. Additionally, the presence of terms like “media,” “misinformation,” “fear,” “trust,” and “behaviour” reflects growing interest in how public narratives and emotional responses shape consumption patterns and policy responses. Words such as “research,” “evolution,” “viruses,” and “protein” imply an intersection with scientific and biomedical research. Overall, this word cloud captures a multidisciplinary focus—blending economics, health communication, virology, and public policy—to understand the multifaceted effects of chicken flu on society and markets.

Data Collection

A total of 7563 responses generated from the sources like X (Twitter), Instagram, and youtube comments related to chicken flu, customer behavior and market responses during flu period.

Sources of data:

- X (formerly Twitter): Posts, tweets, and replies containing keywords and hashtags such as #Chicken flu, #Customer behavior, and #Market response and.
- YouTube: Comments from videos related to chicken flu viral videos, influence of customer behavior and market responses regarding in the form of poultry industry.
- Instagram: Comments from the viral disease like chicken flu videos, and customer behavior and market responses in those particular websites.

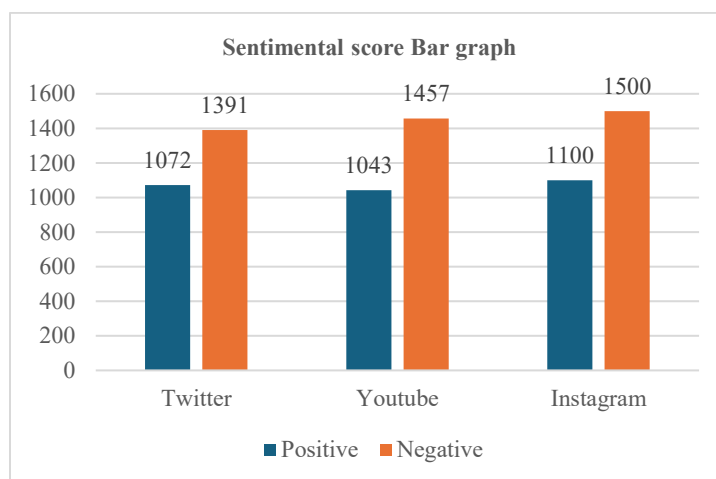


Source: Sentimental tool from (MS Excel)

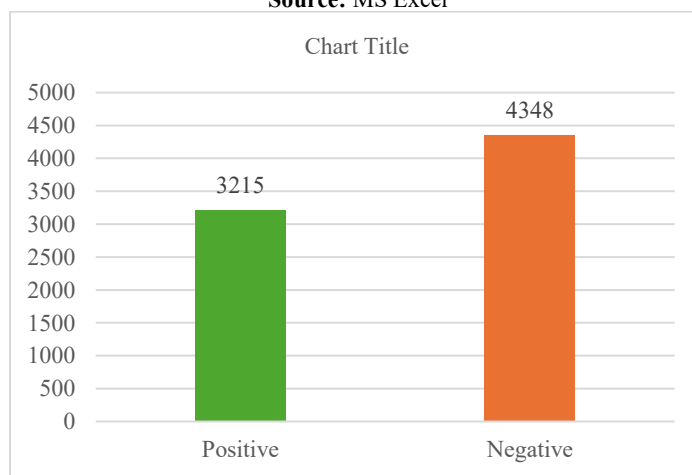
The table 1 represents a total of 7563 responses generated from websites like Twitter, YouTube and Instagram. A total of 2463 responses from twitter and in that 2463 responses 1072 responses have positive impact, and 1391 responses are negative impact generated, and A total of 2500 responses generated and analyzed sentimental tool in that 2500 responses 1043 responses are positive impact and 1457 responses have negative impact generated, and A total of 2600 responses generated and analyzed sentimental tool in that 2600 responses 1100 responses are positive impact and 1500 responses have negative impact generated.

Table 1: Data from various websites and responses

Source	Positive	Negative	Total
Twitter	1072	1391	2463
Youtube	1043	1457	2500
Instagram	1100	1500	2600
Total	3215	4348	7563



Source: MS Excel



Source: MS Excel

Table 2: Sentiment polarity with corresponding reviews:

Sentiment polarity	Number of reviews
Positive	3215
Negative	4348

Calculation of Sentimental Analysis:Total Positive Score ---- **3215**Total Negative Score ---- **4348**Total score (data) ---- **7563**

Positive = Positive Score / Total score

$$= 3215/7563 \times 100$$

$$= 0.4250 \text{ ---- } 42.50\%$$

Negative = Negative Score / Total score

$$= 4348/7563 \times 100 = \mathbf{0.5749} \text{---} \mathbf{57.49\%}$$

Table 2 represents the polarity sentiments towards the impact on chicken flu based on market response and consumer behavior. A total of 3 websites evaluated and among positive sentiments around 3215 (42.50%) and negative sentiments around 4348 (57.49%). In those 3 websites Instagram, X (formerly twitter) and YouTube all three platforms recorded a higher number of negative responses compared to positive ones, indicating growing consumer concern, fear, or dissatisfaction related to the chicken flu incident. The negative sentiment trend suggests a potential decline in consumer trust and willingness to purchase poultry products during the outbreak. The high volume of adverse reactions may also reflect anxiety over food safety, perceived risks of infection, and a lack of clear communication from relevant authorities or brands. Understanding these sentiments can help policymakers, marketers, and supply chain stakeholders develop effective communication and response strategies to restore public confidence and stabilize market demand.

Findings & Suggestions

The study revealed that consumer sentiment during the avian influenza (chicken flu) outbreak was predominantly negative, with 57.49% of analyzed responses expressing fear, concern, or distrust toward poultry products. Social media platforms like Instagram, YouTube, and X (formerly Twitter) showed significant influence on public perception, often amplifying negative sentiments. Market response included reduced poultry demand, pricing volatility, and disruptions in supply chain operations. The bibliometric analysis showed increased academic attention on avian influenza's impact from 2000 to 2024. Key themes included public health risk, misinformation, economic loss, and crisis communication. The findings confirm that both perception and misinformation significantly shape consumer behavior and market trends during health outbreaks. Stakeholders in the poultry industry must invest in clear, timely, and science-based communication strategies to counteract misinformation during health crises. Social media monitoring should be prioritized to track emerging sentiment and respond proactively. Government and health agencies should collaborate with influencers and credible sources to rebuild trust and promote safe consumption practices. Implementing quality assurance certifications and transparent food safety measures can help restore consumer confidence. Economic support policies for poultry producers during outbreaks can stabilize supply and demand. Retailers and marketers should consider diversifying product offerings to include safe, certified poultry alternatives during crisis periods.

Conclusion

Chicken flu outbreaks have a significant negative impact on consumer perception and poultry market performance. Effective communication and policy interventions are essential to maintain consumer confidence and market stability.

Future Scope

Future research can explore sentiment shifts over time to understand recovery phases and long-term behavioral changes in poultry consumption. Integration of AI-driven real-time sentiment analysis tools could enhance outbreak response strategies. Studies could also evaluate the effectiveness of crisis communication campaigns and consumer awareness programs. Cross-country comparisons may reveal how cultural and policy differences influence public reaction and market stability. Expanding research to include retail sales data and producer perspectives would offer a more holistic understanding. Lastly, the role of emerging technologies in food traceability and consumer trust building could be a significant area of investigation.

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