

# Chapter 5

## Combating Evolving Threats: A Systematic Review of Online Ad Fraud Detection

**S. Baranidharan**

 <https://orcid.org/0000-0002-7780-4045>

*Christ University, India*

**David Winstler**

*Christ University, India*

**K. Dhanalakshmi**

*Christ University, India*

**R. Rajkumar**

 <https://orcid.org/0000-0001-9679-8122>

*St. Joseph's College of Arts and Science, India*

### **ABSTRACT**

*This systematic review investigates online ad fraud detection and brand safety research from 2011 to 2024. The analysis reveals a continuous battle against click fraud and its evolving forms. Machine learning has become a cornerstone of detection efforts, offering superior capabilities compared to traditional methods. The rise of mobile advertising necessitated the development of specialized solutions to address distinct user behavior and data patterns on this platform. However, research highlights an expanding threat landscape beyond click fraud, encompassing impression fraud and placement fraud. Brand safety concerns have also gained prominence, emphasizing the importance of protecting brand reputation. The review underscores the need*

DOI: 10.4018/979-8-3693-7041-4.ch005

*for collaboration between researchers and industry professionals to achieve a more secure and trustworthy online advertising ecosystem.*

## **INTRODUCTION**

The digital advertising landscape thrives on a complex ecosystem where advertisers, publishers, and consumers interact to generate and consume valuable content. However, this intricate web is not without its vulnerabilities. Online ad fraud and brand safety violations pose significant threats, eroding consumer trust and costing businesses billions of dollars annually.

### **The Persistent Threat: Click Fraud Detection and Evolution**

Click fraud, the deceptive practice of generating fake clicks on advertisements, has been a persistent menace since the inception of online advertising. Pioneering research by Stone-Gross et al. (2011) provided crucial insights into understanding fraudulent activities within online ad exchanges. Their work on uncovering the tactics employed by fraudsters laid the groundwork for developing effective detection methods. As click fraud techniques grew more sophisticated, researchers turned to machine learning for enhanced detection capabilities. Xu et al. (2014) introduced a machine learning approach specifically designed to identify click fraud on the advertiser side. Jiarui et al. (2015) built upon this foundation by investigating methods to identify crowdsourced click fraud in search advertising. This period (2014-2015) witnessed a significant shift towards leveraging machine learning algorithms to analyze vast amounts of data and identify anomalies indicative of fraudulent activity (Crussell et al., 2014). The rise of mobile advertising presented unique challenges for click fraud detection. Cho et al. (2015) conducted an empirical study on click fraud in mobile advertising networks, highlighting its prevalence and distinct characteristics. Mouawi et al. (2018) addressed this growing threat by proposing a machine learning approach specifically tailored to detect click fraud within the mobile domain. The battle against click fraud necessitates constant adaptation and exploration of novel techniques. Researchers have continued to refine machine learning methods, with studies like Kanei et al. (2019) focusing on achieving “precise and robust detection of advertising fraud.”

30 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage: [www.igi-global.com/chapter/combating-evolving-threats/368382](http://www.igi-global.com/chapter/combating-evolving-threats/368382)

## Related Content

---

### The Globalization of the Art Market: A Cross-Cultural Perspective Where Local Features Meet Global Circuits

Federica Codignola (2019). *Brand Culture and Identity: Concepts, Methodologies, Tools, and Applications* (pp. 1327-1345).

[www.irma-international.org/chapter/the-globalization-of-the-art-market/213769](http://www.irma-international.org/chapter/the-globalization-of-the-art-market/213769)

### Identifying the Basis for Segmenting Higher Education: Evidence from Egypt

Maha Mourad and Hamed M. Shamma (2012). *International Journal of Technology and Educational Marketing* (pp. 42-54).

[www.irma-international.org/article/identifying-basis-segmenting-higher-education/69183](http://www.irma-international.org/article/identifying-basis-segmenting-higher-education/69183)

### A Study of Online Co-Creation Strategies of Starbucks Using Netnography

Preetika Sindhvani and Vandana Ahuja (2014). *International Journal of Online Marketing* (pp. 39-51).

[www.irma-international.org/article/a-study-of-online-co-creation-strategies-of-starbucks-using-netnography/110174](http://www.irma-international.org/article/a-study-of-online-co-creation-strategies-of-starbucks-using-netnography/110174)

### Viral Messages

(2014). *Internet Mercenaries and Viral Marketing: The Case of Chinese Social Media* (pp. 118-140).

[www.irma-international.org/chapter/viral-messages/100864](http://www.irma-international.org/chapter/viral-messages/100864)

### Multi-Sensory Fashion Retail Experiences: The Impact of Sound, Smell, Sight and Touch on Consumer Based Brand Equity

Bethan Alexander and Karinna Nobbs (2020). *Global Branding: Breakthroughs in Research and Practice* (pp. 39-62).

[www.irma-international.org/chapter/multi-sensory-fashion-retail-experiences/231777](http://www.irma-international.org/chapter/multi-sensory-fashion-retail-experiences/231777)