

Chapter 4

Artificial Intelligence as the New Realm for Online Advertising

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ABSTRACT

This exploratory study examines the magnitude of using artificial intelligence (AI) in the five-staged online advertising process: consumer insights, ad creation, media planning, buying, and finally, ad evaluation. It explores if there is a correlation between using AI in each stage and the next. It also investigates the impact of using AI on the overall perceived effectiveness. The study developed the conceptual framework titled “Process Model of AI Utilization in Online Advertising.” An online survey is conducted with a sample of 60 digital advertisers worldwide from both agency and client sides. The findings showed that AI is stepping progressively and differently in the four stages of the online advertising process. There is a relationship between using AI in each stage and the following one. AI utilization promotes the perceived effectiveness of the overall online ad process.

INTRODUCTION

Online advertising includes all online communication to inform, persuade or influence people’s perceptions about a brand (Dahlen & Rosengren, 2016). While traditional advertising follows the mass spray-and-pray practice, digital advertising is data-driven with detailed insights into consumer behavior and campaign metrics. Digital advertising reaches consumers through search engines, banners, video, mobile, and social media advertising (Rodgers & Thorson, 2021).

Artificial Intelligence (AI) technologies grew 154% in 2019 (Statista, 2019) and have progressively advanced online advertising over the last decade. As brands gather and analyze exponential hourly online consumers’ digital touchpoints, using AI technologies has become a game-changing necessity to excel in online advertising. In other words, the more consumers’ big data is collected and grasped by a brand;

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the more opportunities are created in digital advertising. Hence, AI is expected to take up to 80% of global expenditure on digital advertising (Rodgers, 2021). Interestingly, Asian marketers experienced more usage of AI technology in content creation, unlike European and North American professionals who use AI in programmatic advertising and message personalization (Guttmen, 2021).

AI includes Machine Learning (ML), Deep Learning (DL), Natural Language Processing (NLP), Natural Language Generation (NLG), and any other application that qualifies as an AI algorithm. AI promises to enhance audience segmentation, boost ad content quality, create mass personalized ad content, optimize real-time bidding processes, and monitor online campaigns (Liao, 2017). There have been calls for research on AI in advertising (Lee & Cho, 2020; Taylor, 2019). Thus, the exploratory study attempted to fill an existing gap by investigating three fold objectives through its proposed *process model of AI utilization in online advertising*. First, the study explores the global utilization of AI technologies in the four stages of online advertising: gaining consumer insights, ad creation, media planning, buying, and ad evaluation. Second, it investigates relationships between AI utilization in each stage and the next. Third, it explores the effectiveness of utilizing AI in each of the four stages of online campaigns. In-depth interviews with digital advertising professionals and an online survey with a sample of 60 global digital advertisers yielded significant findings on how AI is reforming the online advertising process and its effectiveness.

BACKGROUND

Deconstructing AI building Blocks in Digital Advertising

AI is “a system’s ability to correctly interpret external data, learn from such data, and use those learnings to achieve specific goals and tasks through flexible adaptation” (Kaplan & Haenlein, 2019). AI uses structured data such as basic consumer demographics, transaction records, or web-browsing histories to outline consumer profiles (Kietzmann et al., 2018). However, 80% of the user-generated data is the unstructured texts, speech, and visuals that complement the AI profiles, give them color and yield fruitful insights (Rizkallah, 2017).

Machine learning (ML) is a branch of artificial intelligence where systems can identify patterns and make decisions with minimal human intervention (SAS, 2020). By detecting patterns in the data, ML can reason and propose the best options for the consumer-stated needs more efficiently and effectively than humans (Kietzmann et al., 2018). Juniper Research claims that ML algorithms generated USD 42 billion in annual ad spend in 2021, from USD 3.5 billion in 2016, by driving efficiency across real-time bidding networks (Adext Blog, 2020).

Deep learning (DL) is a type of machine learning that trains a computer to recognize speech and images, describe the content, and predict needs and responses (SAS, 2020). DL depends on large neural networks with multiple layers of processing. DL’s practical applications include speech recognition, such as Skype, Google Now, and Apple’s Siri. Moreover, several popular digital channels such as Amazon, YouTube, and Netflix implement DL recommendation systems, predicting consumers’ interests based on past behavior.

Machine learning and deep learning crave big data to isolate hidden patterns in the data generated at the touchpoints between a (potential) customer and a brand before, during, or after purchasing it (Malthouse and Li, 2017). Big data is often defined by the “3 Vs” of large volumes of data generated

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