Technical University of Applied Sciences Würzburg-Schweinfurt
Faculty of Computer Science and Business Information Systems

Bachelor's Thesis

The Impact of AI Transparency on Advertising Credibility

**Submitted to the Technical University of Applied Sciences Würzburg-Schweinfurt
at the Faculty of Computer Science and Business Information Systems
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Fabian Frank Werner

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Primary Supervisor: Prof. Dr. Karsten Huffstadt
Secondary Supervisor: Prof. Dr. habil. Nicholas Müller

Abstract

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1 Introduction

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Figure 1.1: User-Flow-Diagramm des tollen Algorithmus.

1.1 Background and Motivation

1.2 Problem Statement and Research Gap

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2 Theoretical Foundations and Hypothesis Development

The following chapter establishes the theoretical foundation for the present thesis and summarizes the current state of research. The objective is to develop a comprehensive understanding of the central constructs, critically review existing knowledge, and identify the research gaps that necessitate this study.

First, the core concepts of AI are defined within the context of digital advertising (Section 2.1). Following this, a detailed conceptualization of perceived advertising credibility, the central dependent variable of this study, is provided (Section 2.2). Subsequently, the independent variable—AI transparency, disclosure, and labeling—is examined, along with current findings on consumer responses to such disclosures (Section 2.3).

A synthesis of current research (Section 2.4) will then consolidate relevant findings and highlight existing gaps in the literature. Finally, based on these gaps, the conceptual framework for the study is developed, from which the hypotheses, including the moderating role of general AI attitude, are derived (Section 2.5).

2.1 Artificial Intelligence in Digital Advertising

The field of digital marketing is increasingly permeated by terms such as AI, Machine Learning (ML), and Big Data Analytics. Despite their frequent use, the definitions of these terms are not yet standardized, and there is a lack of clear, universally accepted delineations.

AI is the central concept of this thesis. A universally valid definition remains elusive, in part because the concept of "intelligence" itself is not precisely settled [1, 2]. For example, the German dictionary Duden [3] defines intelligence as "the [human] ability to think abstractly and rationally and to derive purposeful action from it." Academically, AI is often described as a field of computer science focused on solving cognitive problems normally associated with human intelligence, such as learning, problem-solving, and pattern recognition [4]. A more functional definition describes AI as "a machine that

uses any type of algorithm or statistical model to perform perceptual, cognitive, and conversational functions typical of the human mind" (Longoni et al., 2019, p. 630). This technology enables the development of self-learning systems that can interpret data to acquire knowledge, which can then be applied to solve new tasks. AI can, for example, respond meaningfully to human conversation, create images and texts, and make decisions based on real-time data inputs. When integrated into a firm, AI can improve business processes, optimize customer experiences, and drive innovation (Amazon, 2024).

The concept of AI is not new; it has been in development since the 1950s (Bünte, 2018). Its "birth" is widely attributed to the "Summer Research Project on Artificial Intelligence" at Dartmouth College in 1956. While this conference established the field, it was followed by a period of stagnation in the 1980s, often referred to as the "AI winter," as the technology of the time failed to produce tangible business success (Buxmann und Schmidt, 2021; Bünte, 2018). Today's AI boom is driven by a fundamental shift: the availability of abundant, low-cost computing power and the exponential growth of customer data available for marketing. While the world's largest companies were once primarily in the oil industry, today they are organizations that possess and analyze massive data sets (Bünte, 2018). These companies collect customer data, image data, and purchase data, often leveraging sources like user-generated content (Amazon, 2024). In this environment, data quality is a primary driver of competitive advantage. AI provides the means to analyze this data faster and more effectively than humanly possible, making the combination of high-quality data and AI a significant competitive tool (Bünte, 2018). This growing volume of data, in turn, fuels the development of larger and more capable models, making their outputs increasingly realistic and sophisticated (Cao et al., 2018). From an economic perspective, AI can be seen as a contributor to the productivity of the classical production factors of labor and capital, or even as an independent production factor in its own right, leading to new growth effects (Vöpel, 2018). However, the full extent of AI's impact on economic growth remains unclear, with different research findings pointing to varied outcomes (Buxmann und Schmidt, 2021).

Marketing and sales are considered primary beneficiaries of AI, as these departments focus on the often costly interaction with customers (Bünte, 2018). As early as 2018, 80% of marketing managers recognized the enormous importance of AI for business success (Bünte, 2018). In marketing, AI can be used to reduce time expenditure and increase efficiency, particularly in creative endeavors like advertising, which traditionally requires significant human effort (Chaisatitkul et al., 2024). By enabling targeted customer engagement, AI can also foster long-term customer loyalty (Buxmann und Schmidt, 2021).

A particularly transformative subset of AI is AI-Generated Content (AIGC). In a rapidly changing market, AI allows for the cost-effective and rapid modification of products and campaigns (Buxmann und Schmidt, 2021). AIGC utilizes generative AI techniques to create digital content such as images, videos, music, and natural language (Wu et al.,

2023). In marketing, this is applied to create blog posts, articles, product descriptions, and other materials efficiently and at high quality (Wu et al., 2023). This capability is primarily powered by Large Language Models (LLMs), such as the one underpinning ChatGPT, which can understand and respond meaningfully to human language (Wu et al., 2023; Brown et al., 2020). Users provide a prompt, and the system completes the request with a desired output. This process is continually refined through human feedback, which improves the quality of the output and its alignment with user intent (Ouyang et al., 2022). However, these models must be used with caution, as they are trained predominantly on internet data, which can lead to errors and biased information (Ouyang et al., 2022). Simultaneously, generative image models like DALL-E allow users without specialized skills to generate unique images, or modify existing ones, in seconds (Wu et al., 2023). For advertisers, this means that creating a new logo, poster, or campaign visual is no longer a bottleneck.

This shift moves AI from a background tool for data analysis to a visible, active participant in the creation of the advertising message itself. However, for this technology to be effective, its use must be aligned with the brand's values and personality. This alignment is essential for building a foundation of credibility, which in turn has a positive effect on brand perception (Lange, 2016; Marsden, 2019).

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Appendix

References

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