

Chapter 1

Artificial Intelligence, Marketing, and the Fourth Industrial Revolution: Criteria, Concerns, Cases

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ABSTRACT

Artificial intelligence has been part of the world of marketing for some time now. This chapter will look at how artificial intelligence is defined and classified, illustrating its potential for the marketing domain with a variety of examples from various industries and sectors. Ethical concerns arising from the application of AI marketing will be discussed in the second part of this chapter. Before concluding, three brief case studies will give further insights, looking in detail at the AI activities of Airbnb, NYC's Metropolitan Museum of Artificial Intelligence, and retail giant Walmart.

INTRODUCTION

Artificial intelligence (AI) has definitely become a hot topic in the marketing discipline, and is intensely studied by a variety of companies and organisations around the world (Kaplan and Haenlein, 2019a). Although AI is approximately six decades old, it appears that its harvesting period, the so-called *AI fall*, did not begin until recently. As an introduction to this book chapter, we will briefly outline the evolution and history of artificial intelligence over the four AI seasons (Haenlein and Kaplan, 2019).

The birth of AI – its “spring” – can be described with the help of a couple of fictional and actual occurrences. Isaac Asimov's 1942 short story “Runaround”, which surrounds a robot and the much-discussed Three Laws of Robotics, continues to inspire AI academics, engineers, and scientists the like. The same is true for Alan Turing's well-known 1950 scientific paper “Computing Machinery and Intelligence”, which provides the “recipe” for testing the intelligence of a machine. Finally, in 1956, AI

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Spring reached its climax with the term *artificial intelligence* being coined at the Dartmouth Summer Research Project on Artificial Intelligence (DSRPAI) organized by John McCarthy and Marvin Minsky.

A couple of AI summers and winters followed, i.e., the ups and downs of artificial intelligence. Summers were characterized by optimism, hype, and intensive funding for artificial intelligence, overtaken by pessimism and scarce budgets during winter. The first summer period lasted almost two decades, with general enthusiasm and high expectations for the advances made in AI. For example, Marvin Minsky, who in a 1970 *Life Magazine* interview claimed that within three to eight years, a machine could reach the general intelligence of an average human being (Darrach, 1970). As we know, this prediction did not materialize. Instead, pessimism took over, and funding heavily decreased.

Not until recently did the AI autumn and “harvest” make its debut. We might consider AI’s “kick-off” as having been Google’s AlphaGo AI system beating the human champion in the very complex board game Go in October 2015. Previously believed impossible, this match marked a turning point in AI’s history. Previously, computational processing power was simply not strong enough. Artificial neural networks and deep learning simply were not possible. With the triumph of AlphaGo, a new era of AI as well as of the marketing discipline could finally begin.

In what follows, first a definition and classification of artificial intelligence will be provided. In a second part, we will have a look at three ethical concerns which potentially result from the application of artificial intelligence within the marketing discipline. Three real-life case studies will serve as illustrations analysing, in this chapter’s third part, the AI activities of online hospitality broker AIRbnb, the NYC Metropolitan Museum of ARTificial intelligence, and retAI giant Walmart. In sum, this chapter provides the reader with an overview of artificial intelligence and its implications, especially ethical ones, when applied to the marketing domain and field.

CRITERIA – A REVIEW OF THE LITERATURE

Commonly defined as “a system’s ability to correctly interpret external data, to learn from such data, and to use those learnings to achieve specific goals and tasks through flexible adaptation” (Kaplan and Haenlein, 2019b, p. 17), artificial intelligence is categorized into analytical, human-inspired, and humanized AI (Kaplan and Haenlein, 2019b) based on its competencies and types of intelligence: cognitive intelligence (i.e., competencies related to systematic thinking and pattern recognition), emotional intelligence (i.e., achievement orientation adaptability, emotional self-awareness, self-confidence, etc.), and social intelligence (i.e., empathy, inspirational leadership, teamwork, and so forth). Each category will be explained and examples from the marketing domain will be given for the purpose of illustration.

Analytical AI

AI systems that fall into the category of analytical artificial intelligence exhibit cognitive intelligence characteristics only, and thus develop a cognitive representation of the task to solve based on historical data and past experience. The bulk of today’s AI systems used by marketers in particular or business in general fall into this group. A programmatic advertising campaign done the London-based English-language *The Economist* magazine with a worldwide circulation of approximately 1.5 million print copies, will serve to demonstrate AI’s power. When *The Economist*’s editorial board realized that reader

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