

Analysis and Implications of Adopting AI and Machine Learning in Marketing, Servicing, and Communications Technology

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ABSTRACT

Methods for machine learning, or ML, are becoming more accessible, and consumer-generated data is on the rise, both of which are transforming marketing strategies. Researchers and marketers still have a long way to go before they fully grasp the myriad ways in which ML applications might help businesses gain and keep an edge in the marketplace. This study systematically evaluates the academic and corporate literature to present a taxonomy of marketing use cases based on machine learning. The authors have discovered 11 common use cases that fall into four distinct groups that reflect the core areas of leverage for machine learning in marketing: shopper fundamentals, consuming experience, decisions, and financial impact. The literature highlights practical implications for researchers and marketers by discussing the taxonomy's found repeating patterns and providing an analytical structure for analyzing it and extension.

KEYWORDS

Artificial Intelligence, Communications, Machine Learning, Marketing Analytics, Marketing Technology, MarTech

1. ANALYSIS AND IMPLICATIONS OF ADOPTING AI AND MACHINE LEARNING IN MARKETING, SERVICING, AND COMMUNICATIONS TECHNOLOGY

Enterprises face both opportunities and challenges due to the ever-increasing data volume (De Mauro et al., 2015; Sheth & Kellstadt, 2021; el., et al., 2020). Algorithms using machine learning can assist operations and enable educated judgments by utilizing such a big volume of organized and unstructured data (Agrawal et al., 2020). Improving matters further is the proliferation of the Internet of Things (IoT), which is defined as “a system of interconnected physical objects that may sense their environment and share that information with one another and other systems through the internet” (e.g., smartwatches, smartphones, home automation devices, sensors, and for a review, see Sestino et al., 2020). It is feasible to analyze large-scale collective behavior by analyzing such massive

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amounts of data, often known as “Big Data” (De Mauro et al., 2015), in both space and time. This allows one to utilize machine learning (AI) and Machine Intelligence (ML) techniques as a way to detect intriguing patterns and anomalies. According to Davenport et al. (2020), AI systems may learn from their mistakes and adjust their behavior based on what they have learned. They can also function autonomously and exhibit human-like thinking, learning, planning, and creative abilities. On the flip side, machine learning (ML) is a set of procedures used to build AI systems that can learn from the data they consume and so enhance their performance (Agrawal et al., 2020). Given the proliferation of equipment (Internet of Things, computers, software agents, etc.) that generate this data, the significance and value of Big Data are becoming more apparent (Bessis & Dobre, 2014; Sestino et al., 2020). In their never-ending quest for more relevant data, managers and marketers are always looking for new ways to examine and analyze existing data (Sheth & Kellstadt, 2021). According to Ma and Sun (2020), machine learning applications can help with this by providing methods to analyze data and find patterns, correlations, and prediction models. These models can then be used for intriguing marketing purposes.

By analyzing instances of behavior given by the programmer, ML approaches enable computers to carry out certain tasks, such planning and regulating elements as well as results, without explicit programming. Algorithms that can adapt their behavior in response to new input provide the engine that drives machine learning. From social studies to voice or picture recognition, these methods find usage in a wide variety of domains. The use of machine learning algorithms has opened up a world of new financial possibilities. One area where machine learning is useful is in recommendation systems for businesses: Ads are chosen by these algorithms in a flash based on user behavior and preferences as they navigate platforms, websites, or mobile apps. With no reason to alter the algorithm, this procedure takes use of consumers’ preferences by automatically arranging ads based on such preferences. It can enhance its performance on its own. The range of artificial intelligence (AI) applications in business is wide, spanning from virtual assistants to chatbots, to the creation of advertisements made with the profile of a target user to deliberately achieve the highest possible level of performance and maximize the efficiency of budgeting (et al., 2020; Davenport et al., 2020; Huang & Rust, 2021; Ma & Sun, 2020; Vermeer et al., 2019). Because of its increased accuracy and ability to respond in real-time, machine learning is transforming marketing. Big digital natives like Google, Spotify, social media, and Uber are jumping on this bandwagon because they see how these advances can help build apps and platforms that can learn user preferences and tailor recommendations to them.

2. THEORETICAL BACKGROUND

2.1 Big Data and its Contribution to Machine Learning

Big Data, the deluge of data that affects every company nowadays, is constantly growing; in fact, its size doubles every 1.2 years (Shankar, 2018). As a result, conventional data processing techniques are unable to keep up with its increasing complexity (De Mauro et al., 2018). Despite this, cutting-edge innovations are opening the door to supercomputers with limitless storage capacity and lightning-fast data processing capabilities (Duan et al., 2019). To better digitalize and transition strategies for businesses, these technological advancements are necessary to manage the massive amount, diversity, and speed of big data (Sestino et al., 2020). In this light, AI is becoming increasingly significant as it can sift through mountains of data in search of actionable insights, changing the way businesses across all sectors make long-term strategic decisions (Sestino & De, 2021). One definition of artificial intelligence (AI) is “technology able of imitating the thinking processes that belong to a human mind, particularly the capacity to be able to overcome problems and learn” (Jarek & Mazurek, 2019, p. 48). Another definition is “programs, computer programs, machines, and systems that demonstrate intelligence” (Shankar, 2018, p. 7). According to Wirth (2018), artificial intelligence (AI) refers to the

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