Research on Advertising Core Business Reformation Driven by Artificial Intelligence

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Abstract. Driven by big data and artificial intelligence technology, the core business of advertising is gradually becoming intelligent, from consumer insight to advertising information delivery and then to advertising content production. With the continuous progress of cognitive computing technology, it can be predicted that in the future, intelligent advertising will continue to step forward along the trend of "humanization" in line with human needs.

Keywords: artificial intelligence, Programmatic Buying, Programmatic Creative Platform, Precision marketing

1. Introduction

Due to the policy support of governments all around the world, the development of Internet companies, massive Internet data, and the breakthroughs of computing power and algorithm, the development of artificial intelligence technology is in full gear, increasingly showing its powerful influence on the production and life of human society. What changes have taken place in the advertising core business caused by artificial intelligence? How should the advertising core business evolve and adapt to the great changes in the environment? These problems are what we want to do further research on.

2. Literature review

2.1. Research on the application of artificial intelligence technology in the advertising industry

Richard Adams (2004) pointed out that with the comparison of artificial intelligence technology, current operation methods of the advertising industry seem to be very primitive. With the help of artificial intelligence, online media can judge consumers' consumption needs based on their browsing history,
which makes advertisements smarter. Yi Long (2008) pointed out that intelligent technology can be applied to the identification of the advertising audience, content generation, and effect monitoring, etc. Evgeniy Gabrilovich (2009) pointed out that the application of artificial intelligence technology in network advertising has led to the birth of a new subject—computational advertising, which has benefited from many research such as machine learning, machine translation, and text abstracting. Zhang Yan (2017) pointed out that intelligent technology can be applied to the whole process of advertising content marketing: exploring marketing themes, intervening in large-scale production of content marketing, driving precise content delivery of subdivided groups, and enhancing user interaction experience. Liao Bingyi (2017) believes that the application of intelligent technology in the field of advertising communication should optimize and reconstruct the advertising operation process, including advertising investigation, advertising planning, advertising creativity and performance, advertising copy production, advertising media delivery, and advertising effect evaluation. Xue-bing qin (2018) put forward that the application of artificial intelligence technology in the advertising industry is represented in the operational process as consumer insights based on natural language, the analysis of intelligent reasoning advertising strategy, advertising content creation based on intelligent learning, an intelligent recommendation based on the intelligent reasoning, advertising effectiveness and internet advertising supervision based on machine learning.

2.2. Research on the innovation of advertising industry driven by artificial intelligence technology

Chen Gang (2019) believes that current artificial intelligence technology has optimized consumer research and media contact, and improved the efficiency and accuracy of advertising operation. But in the long run, With the intelligent development of advertiser production mode, the advertising industry will be reconstructed and even eventually die out. Yao Xi and Li Na (2018) analyzed the new ecological environment of the advertising industry in the era of intelligence, namely the intellectualization of social production mode, the personalization and virtual experience of social consumption mode, and the accurate matching and customization of information transmission mode. On this basis, the innovation trends of the advertising industry are put forward as follows: form innovation of advertising product, the innovation of advertising production mode, core elements transferment of the advertising industry, the innovation of advertising industry organization structure, deconstruction and reconstruction of the value chain of the advertising industry, and transformation of advertising human resource structure. Malgorzata Izabela Jablonska (2018), on the basis of investigating the application of artificial intelligence technology in advertising operation, namely, audience positioning, attribution, and programmatic placement, pointed out that the advertising industry would undergo the following changes, namely, the restructuring of advertising industry value chain, the change of labor market and the change of advertising industry layout.

In general, the current academic research has paid great attention to the impact of artificial intelligence technology on the advertising industry, but the related research is still in its infancy. The author believes that artificial intelligence, as a comprehensive technology, has been more and more applied in real life. The continuous optimization of intelligent advertising in user demand, algorithm recommendation, and scene matching will make it more intelligent and improve its ability to penetrate and meet human needs. The attributes of advertising will change in the future. Advertising will become
useful information to serve users' lives. The follow-up research can expand its connotation and extension from the perspective of brand information communication.

3. Analysis of artificial intelligence and related technologies

Only after a thorough understanding of the nature, value, and type of artificial intelligence technology can we make clear the revolution of the advertising industry caused by it. The Internet, the Internet of Things, cloud computing, and other technologies have made breakthroughs in data generation, collection, storage, and computing, and promoted the development of artificial intelligence. Artificial intelligence is a branch of computer science, which is a new technology to simulate and extend human intelligence. The essence of it is computation. In computer science, "computing" is the study of "problem solving", so artificial intelligence technology has been widely infiltrated into all aspects of human production and life. The value of the artificial intelligence technology is not only the human intelligent production or service way, thereby improving product or service mode, improve the quality of the product or service, improve the production or service efficiency, reduce the cost of products or services such as human also lies in the artificial intelligence technology to solve the problem of long-standing pain points in various fields. There are many types of artificial intelligence technologies, and the technologies related to the advertising industry include big data, machine learning, pattern recognition (image recognition, voice recognition, face recognition), natural language processing, blockchain, etc.

4. Intelligent evolution of advertising core business driven by artificial intelligence

Artificial intelligence technology leads to population change in advertising related industries and becomes an important driving factor for the operation of the advertising business. All links of advertising communication activities cannot be separated from the support of big data. Driven by big data and artificial intelligence technology, the core business of advertising is gradually becoming intelligent, from consumer insight to advertising information delivery and then to advertising content production.

Fig.1 Advertising core business driven by artificial intelligence

4.1 Change in the target audience

Artificial intelligence has changed consumer decision-making, consumer behavior, consumer advertising cognitive experience, and consumer lifestyle. Artificial intelligence helps to make consumer
decisions and product purchases. Artificial intelligence provides consumers with personalized and natural advertising experiences. Intelligent company enters into consumers' lives, and at the same time reduces consumers' media exposure time.

4.2 Change of the advertisers
With the advent of the Industrial Revolution 4.0 era, the production and marketing methods of advertisers appear intelligent evolution. With the help of artificial intelligence, advertisers' responsibilities have changed and they are completing more and more advertising business by themselves. In the Era of Industry 4.0, enterprises can directly and efficiently interact with consumers and provide them with personalized and customized products. There is no longer any need for advertisements to promote bulk products already produced to consumers. All this has led to the shrinking demand of advertisers to advertise.

4.3 Reform of advertising media
The intelligent evolution of advertising media is characterized by the combination of man and machine and coevolution. The variety of advertising media is constantly enriched, and all the objects connected to the Internet of things can become the media to transmit advertising information. The communication mode of advertising media has been evolving. There has been large-scale, high-efficiency, and personalized advertising communication. The function of advertising media is constantly enhanced. Advertising media not only has the function of transmitting advertisements but also has the functions of targeting target consumers, clarifying the psychology of target consumers, advertising production, and statistical analysis of advertising effects.

The market pattern of advertising media has brought about great changes. The online media advertising market is expanding. At the same time, advertising in traditional media will be significantly impacted. The outdoor advertising market will continue to expand.

4.4 Change in consumer insight: precision marketing
Precision users, anti-cheating, and other precision marketing applications are the most mature among artificial intelligence applications. Precision marketing is one of the most mature fields in the commercial application of artificial intelligence. The foundation of precision marketing is high-quality data sources. There are three ways for precision advertising marketing service providers to process data: Through the DMP data management platform, it mainly means to accept the authorization of the data owner, conduct data processing according to its requirements, and use the processing results to guide operation optimization; Through Data trading platform, that is, Data is collected from the Data owner and processed according to its logic and requirements, and the Data is directly or indirectly realized to share with the Data owner; Through audience orientation system. Namely according to the company can access a variety of data user labels or portraits, optimize their own advertising system effect. It is to establish data tags for crowd classification and to target users.

Accurate delivery is based on big data. What tests each platform is not the size of the data, but how to process the data with professional technology[1]. Data label is an important method for the selection of various platforms. In the amazon platform as an example, according to the population attributes, interests, social attribute, brand preference, and shopping crowd characteristics can be divided into five
dimensions. 5 dimensions is further divided into 52 categories, 380 small classes, and 1200 labels, through the label accurately depict the character image, marketing for digital data support their implementation. In the process of subsequent advertisement release, the platform will place advertisements on corresponding label customers according to the target customer positioning of advertisers, so as to achieve precision marketing. For example, when Apple is promoting a certain model, according to the target customers of advertisers, the platform can target ads to people aged between 20 and 40 years old, with middle-income level and mobile shopping tendency.

With the help of artificial intelligence, the precision marketing field can also break through the internal CRM data of enterprises. In the future, the competition in the Internet digital marketing industry will change from extensive/resource-based to refined/intelligent. Vertical service providers with strong technical strength are expected to stand out. The 1.0 era of big data intelligent marketing is based on user identification and behavior monitoring, data warehousing and mining analysis, user model identification, attribution analysis, optimization, and other technologies. It finally realizes the intelligence and refinement of search marketing, through the integration and mining of external data to achieve the purpose of improving the exposure rate, traffic conversion rate, and marketing. In the 2.0 era, through the integration of enterprise internal data and external data, the phenomenon of information island of each department is solved to realize the reconstruction of the business marketing and operation optimization process.

4.5. change in intelligent dissemination of advertising information: programmatic buying and programmatic creative platform

Under the influence of big data and artificial intelligence technology, programmatic Buying has realized the intelligence of advertising. Programmatic Buying is based on big data and artificial intelligence technology that clearly enables consumers to automatically execute the media buying process on their behalf through a digital platform, providing with information that matches their characteristics and needs.

Publicis Groupe Zenith reports that programmed purchases will reach the world by 2022. Zeneca expects total global programmatic buying will reach $57.5 billion this year. Algorithm-based programmatic buying has gone from a buzzword to a common tool in advertising and marketing. In the next two years, automated advertising and marketing, in addition to consolidating its dominance on the Internet and mobile, will also include traditional advertising channels, including TV, radio, and outdoor advertising.

Advertising creativity is the soul of advertising activities, which can best reflect the value of advertisers. We used to think that the creative activities of humans could not be replaced by machines, but the recent emergence of the programmatic creative platform has changed that view. The programmatic creative platform is a smart way of producing ads that are created and optimized using data and algorithms that are kept separately by the machine system.

Ai can turn itself into efficient copywriting and design, creating thousands of personalized ads and videos for car companies like Toyota, or into super customer service, working around the clock as a chatbot or a personal secretary to meet customers' bizarre and varied needs. In 2018, Tencent launched Tencent Intelligent Marketing Cloud: on the one hand, continue to improve marketing accuracy through more data and better algorithms; On the other hand, image recognition, speech recognition, and natural
language processing (NLP) technologies are used to realize richer communication media including video, picture, and voice, which also has great innovation space in the intelligent interactive experience. Artificial intelligence has made programmatic buying more precise and efficient, as well as enabling personalized content and recommendations.

4.6. Change in the decentralization of information: blockchain technology

If the Internet has made information be digital and more mobile, blockchain is expected to make assets and values be digital and mobile. Developing technology such as cloud computing, artificial intelligence, and big data will make the flow of assets and value more transparent and efficient. With the mobility of assets and values, the economy of trusting comes. Blockchain cannot eliminate human dishonesty, but it can reduce information asymmetry in the process of information transmission through its openness and transparency. In the recently released Blockchain: Trust Economy report, Deloitte believes that trust, not credit, will be the basis of value exchange in the future business world[2]. It will act as a trusted gatekeeper, making the online behavior and participation of everyone and everything transparent and searchable. The blockchain distributed accounting technology ensures the security of data and makes the storage and sharing of data faster and more transparent through "decentralization". In the alliance of big data, artificial intelligence, and new reality technology, 4A advertising companies, and advertisers also hope to join the blockchain, "Decentralisation", "security and transparency" and "intelligent contracts", any of them in the blockchain has the power to change digital marketing communication.

5. Conclusion: Future optimization of advertising driven by artificial intelligence

Robert McChesney, an American communication political economist, put forward the concept of "communication transformation". He believes that the digital communication revolution based on the Internet and mobile communication has brought about the critical juncture in the history of human communication[3]. Artificial intelligence is the latest revolutionary new technology to challenge existing institutions. The development of artificial intelligence technology brings a subversive innovation for advertising communication, which endows the future brand communication with infinite vigor and vitality. However, the practical development also makes us rethink its rational application and optimization in the aspects of algorithm technology, user experience, and brand content, etc., so as to continuously guide intelligent advertising in a better direction. Paul Levinson, the representative of the media environment school, put forward the famous media "humanization trend" theory, which believed that media technology showed a tendency of more and more meeting human needs and facilitating human to use it for information communication in the evolution process. With the continuous progress of cognitive computing technology, it can be predicted that in the future, intelligent advertising will continue to step forward along the trend of "humanization" in line with human needs.

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