# AI IN PROGRAMMATIC ADVERTISING

**Ghanshyam Prasad**
Student
NCRD's Sterling Institute of Management Studies,Nerul,Navi Mumbai
ghanshyamprasad000@gmail.com

**Prof. Deepali Shah**
Assistant Professor (MCA)
NCRD's Sterling Institute of Management Studies,Nerul,Navi Mumbai
dipali.83@gmail.com

**ABSTRACT:**

*This paper presents an overview of the Artificial intelligence (AI) in Programmatic Advertising. By analysing the current applications of AI, cases in the near future, its possible use, how to implement it and areas for improvement of AI, we can achieve an understanding of AI to a higher level and its long-term implications in Programmatic Advertising.*

*AI offers an improvement to current advertising tactics, as well as entirely new ways of creating and distributing value to customers. New advertising tools such as biometrics and conversational user interfaces offer novel ways to add value for brands and consumers alike. These innovations carry similar characteristics of hyper-personalization, scalable experiences, efficient spending, and deep insights.*

*The recent progression of AI in advertising is indicative that it will be adopted by a majority of companies in near future. The long-term implications of vast implementation are crucial to consider, as AI-powered industry requires fundamental changes to the skill-sets required to thrive, the way advertisers and brands work, and consumer expectations.*

***Keywords:*** *Online customer experience, Customer decision journey, Personalization, Artificial Intelligence, Digital advertising.*

## 1. INTRODUCTION:

Artificial Intelligence (AI) is a category of technologies and field of study that has been around for decades yet has only recently been feasible to implement. Despite its relative infancy in the market, applications of AI already boast impressive efficacy across industries, particularly in advertising. Recent advancements in AI technology and growing numbers of use cases demonstrating its effectiveness have garnered excitement amongst advertisers. This excitement has not fully translated into a universal understanding of how the technology

works, its practical implementation, and the long-term implications it carries. As AI quickly becomes more sophisticated and widely adopted in advertising, the ability for advertisers to effectively implement and manage it will become an ever more important skill. Likewise, individuals' understanding of their role in creating and distributing value in an AI-powered workplace is pivotal to the success of their career, the companies they work for, and the consumers with whom they interact. It thus stands that AI may soon insinuate sweeping change to the nature of advertising itself. The "AI Advertising Era," as it may appropriately be labelled, entails fundamental changes to the manner in which advertisers interact with customers, the tactics, and tools they use to achieve their goals, the skills they regard highly in the workplace, and the nature of their day-to-day responsibilities. Similar to the magnitude of change brought forth by the advent of computers, artificial intelligence carries the potential to change the nature of marketing drastically. It is for this reason that the topic of artificial intelligence in advertising requires in-depth research and analysis to prepare for changes to come.

The increasingly sophisticated advancements in AI technology paired with a disconnect between heightened levels of excitement among advertisers and high-level implementation makes the topic of AI advertising evermore crucial to research. As such, this thesis holds that despite issues at macro and micro levels in need of being addressed before its widespread adoption, artificial intelligence offers net-positive benefits to advertisers, consumers, and society as a whole through its ability to improve the creation, optimization, and distribution of value.[1]

## 2. LITERATURE REVIEW:

SPAR Switzerland uses AI-driven customer data to produce personalised campaigns of their Facebook audience. The campaign successfully increased the member base of the loyalty program and more personalized customer experience is provided. SEA Group uses AI-driven customer data to produce real-time and highly personalized advertising campaigns for a specific customer segment. The campaign resulted in better customer engagement and facilitates customer loyalty. Likewise, this paper focuses on solution to both improving the digital experience and producing more personalized content with Artificial Intelligence (AI). [2]

A machine learning algorithm called Rank Brain is currently Google's third most important ranking signal. In the past, Google's developers monitored search results and tweaked algorithms to better suit search needs. SEO experts then tried to reverse-engineer each algorithm change to better position their content. With Rank Brain in the driver's seat, though, no human being will know why content is ranked up or down. The algorithm will continuously be testing and refining settings based on user behaviour. The ranking signals that will matter most will be those related to user activity: a) Time on page, b) Bounce rate, c) Pogo sticking[3]

AI-powered technology is not just limited to our everyday routine such as Siri, Alexa or Netflix recommendation engines but AI can change lead generation and provide greater growth for marketers. AI-powered systems can lead into improving company's marketing strategies by using data from customers and leads to make intelligent, helpful predictions about your leads.

I M DIGI is a platform that provides complete training to the industry executives and entrepreneurs. I M DIGI is the one field that every marketing executive should now be well-versed with. I M DIGI has launched a digital marketing training program of their own. I M DIGI consists of these modules: Orientation of Digital Marketing, Search Engine Optimisation (SEO), Search Engine Marketing (SEM), Google Analytics and display ads, Social Media Marketing (SMM), Email Marketing, Web Analytics and YouTube Marketing.[4]

In terms of advertising Facebook uses great manner of advertising as they are track interests of people and on the basis of their interest, they show ads to people which they are most likely to click. Also, YouTube shows people the kind of videos they mostly watch. In conclusion, artificial intelligence helps social media to create more engagement on their platforms.

**3. PROBLEM DEFINITION:**

The study describes the importance of AI in programmatic Adverising while targeting a set of audience. For this, it is necessary that the data collected by the AI for targeting the particular audience is valid and relevant. The Online Customer Experience (OCE) decides the customer decision journey. Also, it is important that customer decision journey is mediator variable that explains the relationship between AI applications and OCE. As only a specific AI based advertising application can be used at a specific stage of the customer decision journey to

improve the online customer experience at that stage. So, further researches could be conducted in order to have a precise and accurate data for testing the relationship strength of different variables for data collections by AI.

## 4. OBJECTIVE/SCOPE:

1. This paper analyses the impact of artificial intelligence on advertising at micro and macro levels.

2. The research analyses how AI in programmatic advertising can enhance the user experience.

3. The study focuses on how Artificial Intelligence can maximise ROI.

4. The research also explains Artificial Intelligence tools that makes search session easier by focusing on relevant surveys.

5. This paper explains strategies by which AI can makes it easier to forecast sales and help business expand.

## 5. RESEARCH METHODOLOGY:

The research methodology used in this paper is by understanding the customer decision journey while choosing a product. The online customer experience is analysed and then based on the customer's experience AI targets those audience to project ads related to their interests.This could be explained by following the process in a systematic way to maximise the Artificial Intelligence applications. Different concepts of the customer decision journey have been explored to identify the different stages of the journey and related customer activities at each stage. Furthermore, studies about online customer experience are reviewed, and various antecedent factors that influence the online customer experience is examined.

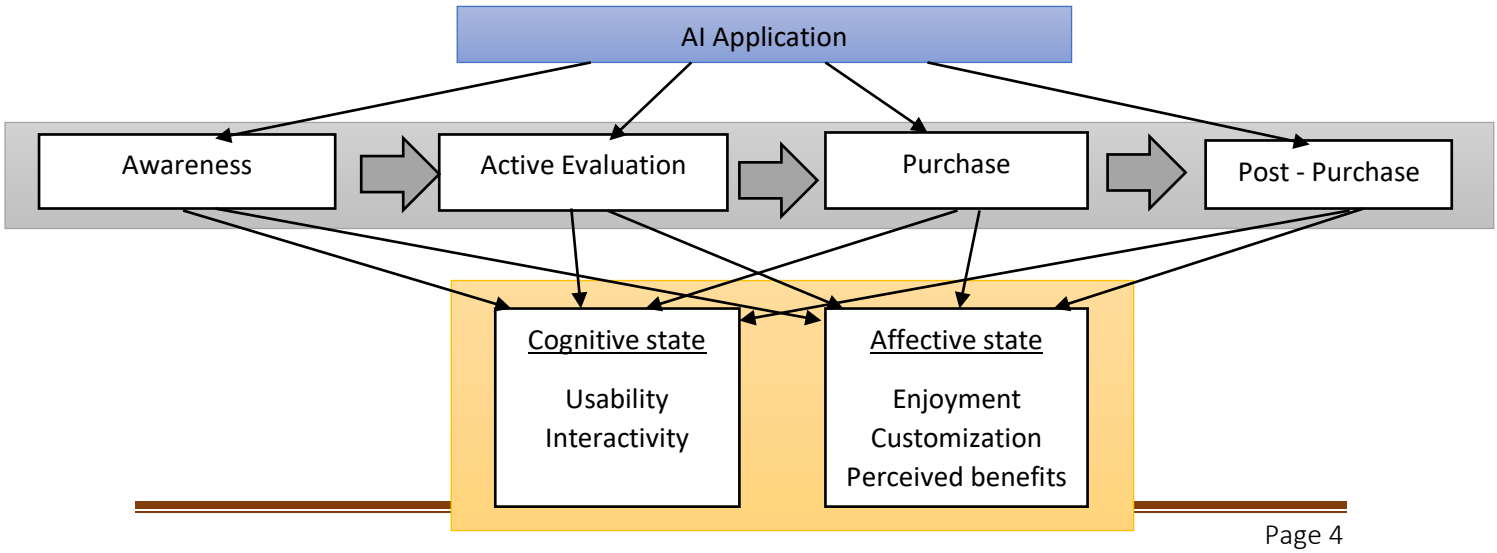

Fig. 1: Customer Decision Journey
(Reference: http://essay.utwente.nl/78559/1/Schipmann_BA_BMS.pdf)

**Awareness**: In the awareness stage, the consumer already has triggered a need and begins to deliberate possible offerings to satisfy its need.

**Active Evaluation**: In the active evaluation stage, the consumer is refining its brand choices by evaluating different brand options based upon product attributes, price, availability and purchase channels.

**Purchase**: In the purchase stage, the consumer already has evaluated the different brand options of its consideration set and also may have formed an intention to buy for a preferred brand.

**Post – Purchase:** In the post-purchase stage, consumers use the product and evaluate their purchase

For the research to be completed in an accurate manner, this study has followed certain specifications on which these aspects of AI, targeting to particular audience are done by providing relevant surveys. These specifications followed by the AI's includes: what it is, how it works, and the need-to-know terminology for marketers.

**Consumer Perceptions -**

Currently, consumers have positive-leaning, yet mixed emotions about AI. The majority of general consumers think that AI will make society better. According to a global independent survey conducted by Arm and NorthStar in 2017, 61% of consumers believe that AI will make society better or much better, while 22% believe it will make society worse or much worse indicating positive-leaning perceptions. PwC (2017) reported that 63% of people agree AI will help solve complex problems that plague modern societies, and 59% of people agree AI will help people live more fulfilling lives. Further, 46% of people believe AI will harm people by taking away jobs, and 23% think AI will have serious, negative implications. Feelings of AI are polarized, but slightly more positive than negative.[5]

**Retargeting** –

A form of digital advertising is retargeting which is closely linked with programmatic and machine learning. Retargeting ads are high performing, often better or the same as search (91%), email (91%), and other display ads (92%). They are a form of automated ad buys that trigger based on tracked information about a user (such as past viewing history, recently

purchased products, and other behaviours) primarily through third-party data (e.g., browser cookies) and first-party data (e.g., previous purchases with a brand). Retargeting ads typically utilize personalization to make for more relevant messaging to customers, resulting in a higher average click-through rate (0.7%) compared to traditional online ads (0.07%).[5]

**Segmentation and Targeting** -

Image recognition and computer vision allow companies to achieve a deeper understanding of their customers, and segment accordingly. As discussed in the previous section, the pictures that an individual shares or shares reveal valuable insights into what makes them tick. That information can then be used to segment customers to be targeted with personalized advertisements. For example, Coca-Cola's Gold Peak iced tea brand utilized image recognition technology to scrub through Facebook and Instagram, then find people who are drinking iced tea and exhibit happy emotions. The performance of this tactic was clear-cut as the brand was able to see a click-through rate of over 2%, which represented a 3-4x increase over its previous ad performance.[5]

## 6. ANALYSIS AND FINDINGS:

The study finds that AI can learn and adapt their actions based on the customer behaviour. These are the various different pattern that they encounter and they can be suitable to take actions based on those real – time environment of programmatic advertising. AI algorithms processes huge datasets easily and in less time. With these factors combined, AI shows various aspects of programmatic advertising:

Personalization:

AI gathers and organizes large quantities of data relating to each user that visits a website. This data can then be used to segment audiences and to serve more relevant, more personalized ad content to each user. In some cases, it is even possible to use AI to adjust the ad creative based on what it knows about the user who will be seeing the ad.

Content matching:

Natural Language Processing (NLP), which is a component of AI, can be used to improve the contextual relevance of ads by comparing the content of an ad to the content of a website and making sure that ads are displayed only on relevant websites. This also helps to protect brand image, by making sure that ads do not appear in an inappropriate context.

Budgeting:

AI can help advertisers to adjust their bidding strategies based on their customer information and to determine the right bidding price for ad space they want to purchase. This helps to reduce ad spend and to increase ROI.

AI can also help to determine which advertisers are more likely to be successful with their bids for the ad space, which benefits the publishers by limiting the auction only to the most suitable bidders.

Predictive analytics:

AI algorithms can deliver predictive insights by taking into account a wide range of factors, such as a customer's browsing history, a customer's installed apps, a customer's past purchases, a customer's past interactions with ads, and a customer's resemblance to previously identified high-value customers. These insights can help advertisers to improve their targeting and bidding and to increase their ROI.

## 7. LIMITATIONS:

The limitation of this study is the dynamic surrounding and changing opinions of people. Targeting audience based on surveys differs from person to person which narrows down the search to a limited audience. This reduces the target audience for the particular advertisement. Also, AI in programmatic advertising is still a new technology in market. There is a lack of research on this topic. The effectiveness and implications of using this technology is still unknown to people. Another limitation of this study is limited target audience. With few audiences the ads will have a limited reach. Providing surveys by AI's for perceptions of audience will vary. This will result in less selling of ads and restrict the growth of the companies.

## 8. CONCLUSION:

The era of AI Advertising is rapidly approaching and carries with it far-reaching implications. As AI quickly becomes more sophisticated and widely adopted in advertising, the ability for advertisers to effectively implement and manage AI solutions will become an ever more necessary skill set. Likewise, an individual's understanding of their role in creating and distributing value in an AI-powered workplace is not only pivotal to their success, but to the success of their company.

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