

What's Real and What's Fake: A Study on the use of Deep Fake Technology in Advertising

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ABSTRACT

According to the research "World Advertising Market: Industry Trends, Share, Size, Growth, Potential and Forecast 2021-2026" by IMARC group, the global advertising industry is anticipated to reach US\$ 875 billion by the year 2026, with a predicted CAGR of 5.2% between 2021-2026. The range of digital advertisements has expanded along with the use of mobile devices and the internet. With the rise of working women and tech-savvy, career-driven millennials, higher disposable incomes, and other changes in the 21st century, advertisers and marketers now have more target groups to choose from.

Due to the size of the advertising market and the rise in the volume of commercials, it is getting more and more difficult to capture them.

Keywords: advertising, deepfake technology, experiential marketing, hyper-personalized advertising

I. INTRODUCTION

We are on the edge of the fourth industrial revolution which will fundamentally transform the way we live, work and relate to each other. The breakthrough in artificial intelligence and robotics has empowered it to blur the lines between physical, biological and the digital realm. AI is colliding with every industry yet we do not know how it will unfold.

But it all goes back to the time of the second world war. English mathematician, Alan Turing, made a breakthrough during the second world war which hastened the victory of the Allied forces. He was obsessed with the idea that he needs to devise a machine that can think like a human, but only faster. This idea was validated by the success of his breakthrough machine 'Bombe' that broke the Nazi encryption code made through 'Enigma'. His legacy lives on through the advanced machines that are used today. Fascinated by the interplay between human thoughts and its machine replication, he is regarded as the visionary who provided seminal insights into what has now become 'Artificial Intelligence'.

Artificial intelligence heralds the fourth industrial revolution by attempting to imitate human intelligence. It is a revolutionary technology which acquires information and makes decisions to achieve specific goals through the detection of patterns. In the theoretical paper, 'How Artificial Intelligence will change the future of Marketing', authors Thomas Davenport, Abhijit Guha, Dhruv Grewal and Timna Bressgott, (October 2019) state that AI relies on certain technologies namely, machine learning, natural language processing, expert systems, neural networks, deep learning, physical robots, and robotic process automation.

The term 'deepfake' was coined in December 2017 which is a portmanteau of 'deep learning and 'fake'. It is an emerging artificial intelligence technology that is based on the neural network technology. Deepfake refers to videos or other digital contents that are manipulated or fabricated through a computer algorithm. It can be a complete fabrication or it might have some truthful elements. In both the cases, they are made with the intention of giving a realistic impression to the viewers. This is done through the algorithm studying all kinds of digital contents like photographs and videos of the target person from multiple angles. A target person is the person whose deepfake is intended to be prepared. The deep-learning system then mimics their behavior and speech patterns to create a persuasive counterfeit. Deepfakes have a notorious reputation for generating fake news and are considered to pose serious threats in some areas, such as politics, litigation, defense, journalism, but areas like photography and advertising can also be significantly impacted by this technology.

Deepfake started surfacing on the internet very recently from 2017. It is a fairly new technology and there is a scarcity of adequate research in this specific technology given the short time frame. Moreover, the COVID-19 pandemic has hindered in-person production, and there is an uncertainty about the duration for which the disturbance will continue. The use of digital technologies such as "deepfake" is likely to become prevalent increasingly. This probability of increase in deepfake advertising content prompted the analysis and research in this domain.

Furthermore, the technology is considered to be in the nascent stages and there has been a lack of specific research about its impact on marketing and advertising. The existing research is mostly limited to the perspective of the

threats posed by the technology and its potential misuse. It does not consider the perspective of consumers and how the content is received by the viewers. Also, after doing a detailed scrutiny of the available literature, it was observed that there is an absence of any substantial work in this particular area that is based on India.

The objectives of the study are:

- To determine the feasibility of deepfake technology for advertising agencies in India
- To understand the impact of deepfake technology in digital ads
- To measure the effectiveness of deepfake ads
- To ascertain the perception of consumers towards such digitally enhanced ads

II. EXPERIMENTAL METHODS AND MATERIALS

2.1 Research Methodology

- **The Need of the Study:** Since the onset of the pandemic, there has been an increase in the number of deepfake advertisements. But there has been a lack of research exploring the perceptions of consumers about the advertisements and the feasibility of the technology for the advertisers. This prompted the need for research.
- **Population:** The population has been selected with no bias based on age or income.
- **Research Design:** This research has been designed to include Empirical, Exploratory and Descriptive studies. The empirical aspect of the study is covered by primary research techniques mainly Questionnaires. Questionnaires will be issued to individual viewers and consumers and the selected advertising agencies. Explorative study is conducted through secondary research by scrutinizing materials like Articles, Magazines, Periodicals, Dailies and any Special Survey that may have been conducted earlier.

Descriptive study is conducted to understand the characteristics of the phenomenon or the sample. Accordingly, the research aims to understand the characteristic reactions of the consumers when they see Deepfake ads. Also, it is accompanied by the advertiser's perception of the same.

- **Sample Size:** The sample size of consumers for this research is 250 consumers. Further, a sample of 60 advertisers has been selected for the research.
- **Sampling Method:** For this research, non-probability sampling methods were used. For the survey of consumers, snowball sampling has been used to circulate the questionnaire. It is also called chain referral method. For the survey of advertisers, non-probability sampling has been done, specifically, purposive or judgement sampling, wherein the top 10 creative agencies have been selected for the survey purpose.
- **Data Collection Method:** There are two types of data that has been used in the research project namely Primary and Secondary Data.
 - a) **Primary Data:** The data that is collected first hand by researchers is primary data. This is done by observation and enquiry. For this dissertation. Primary data is the key data that has been studied using the data collected from the aforementioned sample population.
 - b) **Secondary Data:** This data is the information that has been gathered from other sources. For this research, mostly articles and previous scholarly articles have been used to collect secondary data. This helps to gain an understanding of the literature available on the subject.
- **Data Collection Tools:** The data collection tool used in the research were two questionnaires prepared using Google Forms and disseminated through social media platforms: WhatsApp and LinkedIn.
- **Questionnaire Design**
 - a) **Consumer:** The questionnaire predominantly contained close-ended questions however one open-ended question was also asked. To make the questionnaire comprehensible and engaging, different patterns of questions were posed to break the monotony with videos and pictures of well-known advertisements. Also, 5-point Likert scales, 3-point Likert scales and dichotomous scales were mainly used in the questionnaire.
 - b) **Advertiser:** The questionnaire predominantly contained close-ended questions utilizing 5-point Likert scales and dichotomous scales. Also, the questionnaire contained an open-ended question at the end.

III. RESULTS AND DISCUSSION

3.1 Statistical Modeling and Analysis

Table 1: Consumer Survey Form Analysis

Cronbach's Alpha	Number of Items
0.757	8

Table 2: Advertiser Survey Form Analysis

Cronbach's Alpha	Number of Items
0.734	5

Anything above 0.7 is considered a good score hence here the values indicate good reliability.

Hypothesis Testing

- H₀: there is no significant association between the requirement of a deepfake technician to make Deepfake ads and the likeliness of advertisers to use Deepfake technology to make ads.**

P value = 0.661139167

When p value is greater than 0.05, the null hypothesis is accepted. Hence, there is no significant association between the two categories, i.e., the requirement of a Deepfake technician to make Deepfake ads and the likeliness of advertisers to use Deepfake technology to make ads.

- H₀: there is no significant association between age of the respondent and their willingness to see Deepfakes ads more frequently.**

P value = 0.000628219

When the P value is less than 0.05, the null hypothesis is rejected. Hence, there is significant association between the age of the respondents and their willingness to see Deepfakes advertisements.

- H₀: there is no significant association between the people finding Deepfake ads misleading and their willingness to see more such ads in their daily life.**

P value = 0.00000251644

When p value is less than 0.05, the null hypothesis is rejected. Hence, there is significant association between the two.

- H₀: there is no significant association between how costly advertisers perceive making Deepfake ads and how likely they are to make ads using Deepfake technology.**

P value = 0.013413877

When p value is lesser than 0.05, the null hypothesis is rejected. Hence, there is significant association between the perception of advertisers about the cost of making Deepfake ads and the likeliness of the technology's usage in making ads.

The quantitative analysis of the research data has been carried out above. Further, qualitative inferences and findings are delved into hereunder in accordance with the objectives of the paper.

The survey conducted for advertisers has been a major source of revelation regarding advertisers' perspective about Deepfake advertisements and the feasibility of the technology for content creation. Mostly advertisers have said that Deepfake advertisements are creative and entertaining, but they also consider such digitally enhanced ads to be misleading.

The ads that the respondents already knew, such as the ones featuring Mark Zuckerberg, Russian President Vladimir Putin and North Korean Dictator King Jong-Un are typically characteristic of these responses given by the advertisers. These few ads are very popular examples for displaying how the technology can be used for manipulation. Moreover, they gave a lukewarm response of 'average' when they were asked to rate Deepfake ads compared to other advertisements. But the respondents were less aware about those Deepfake ads which were used for positive purposes. A very specific advertisement featuring David Beckham was created by 'Malaria No More, UK' Charity to broaden the reach of the public message of a malaria-free world. The ad created 400 million impressions just within two months, in which Mr. Beckham could be seen speaking 9 languages with help of Deepfake technology. Exposure to more such ads might influence and change the opinions of content creators as well as consumers in the future.

Moreover, when it comes to the application of the technology for making advertisements, a majority of the advertisers, that is, 65% of them believe they will require a Deepfake technician to guide them in the process of creation. But overall, it doesn't affect their inclination towards using the technology as found by the hypothesis testing. On the contrary, the hypothesis testing revealed that the cost of using the technology for making content has been found to affect the inclination towards its usage. Furthermore, 50% of the respondents believe that the technology is affordable and the next highest response of 25% of the advertisers, is that the technology is very affordable in monetary terms.

When advertisers were asked about their interest to use the technology in the future for producing ads, there was a mixed response. An equal number of advertisers voted for 'very unlikely' and 'likely' categories. Thus, in the minds of advertisers in India, there is ambiguity when it comes to further exploring the technology.

To ascertain the perception of consumers towards such digitally enhanced ads, the consumer survey form has been the primary source of learning. While the 68% consumers hadn't heard the term 'Deepfake technology' but a significant percent of respondents, that is, 44.8% had seen Deepfake ads before the survey was conducted. This shows how Deepfake content is slowly rising in terms of quantity and popularity in India as well as abroad.

Moreover, 93 people or 37.2% of the respondents out of a total of 250, consider Deepfake advertisements to be 'good' in comparison to other advertisements which do not use the technology, with a closely followed 'average' response by 85 people or 34% of the population. The most frequent reaction by consumers was that of surprise after seeing Deepfake ads, followed by shock and worry. This indicates that though consumers marvel at the advancement of

technology, they are simultaneously worried about being manipulated through such breakthrough revolutions. This corresponds to the responses where consumers highly rated these ads to be creative and entertaining as well as misleading and harmful.

Furthermore, when it came to seeing more ads in the future which adopt Deepfake technology as 78 people or 31.2% of the respondents chose 'undecided'. Additionally, it has also been found that there is a significant association between the age of the respondents and their willingness to see more deepfake ads. Also, the hypothesis testing revealed a significant association between consumers finding deepfake misleading and their willingness to deepfake ads around them.

This provides an opportunity to advertisers for exploring Deepfake to capture the consumer's attention who are awestruck by the 'creative' potential of the technology but are on the fence. When the audience is given a disclaimer that the following content is made using Deepfake technology or if the subtleties are made obvious through which the audience can deduce that the content adopts Deepfake, the audience will not feel manipulated or cheated by such digitally enhanced advertisements and the full benefits of the technology can be harnessed for advertising and reaching consumers.

The effectiveness of Deepfake advertisements can be seen by the success of the previous ad campaigns run by some renowned companies. The example of the campaign "Malaria No More" mentioned before, which featured famous soccer player David Beckham, created approximately 400 million impressions within just 2 months of its release. The campaign used a famous personality to spread its message in nine different languages to reach the viewers in their mother tongue. This is a classic example of the unexplored potential of this technology in advertising.

Moreover, the article "Spotify Created an AI-Powered Avatar of The Weeknd for a Personalized Listening Experience" by Patrick Kulp, as reviewed before, proves to be a stupendous example of how the audio streaming service provider Spotify combined Deepfake, artificial intelligence and a recognised personality to offer personalised experience to its users. The popular singer 'The Weeknd' could be seen engaging intimately with his fans through the digital experience "Alone with me" after Covid-19 pandemic prompted the cancellation of his tours and concerts. Also, the availability of custom performance mode for his latest music singles which could be controlled by the users further attracted and engaged those who were missing the connection of live music.

Deepfakes have also entered India as it was used for making a political advertisement during the Delhi Assembly Elections. The advertisement used Deepfake technology to reach out to different linguistic groups, in Hindi, English and Haryanvi, even when the representative could not speak all these languages. This helped them reach a wider target audience, approximately 15 million people and the videos were shared amongst 5800 WhatsApp groups in the Delhi and NCR region.

Deepfakes have also been effectively used for advertising of events, as in the case of the "Dali Lives" exhibition which was held in Dali museum in St. Petersburg, Florida, United States of America. In this exhibition, famous painter Salvador Dali who died in 1989 could be seen greeting, interacting and taking photos with the visitors while offering a unique experience to each visitor. All of this was possible through the application of Deepfake.

Therefore, it can be said that Deepfake advertisements are impactful. Their impact can also be potentially seen in Experiential marketing. In the traditional sense, Experiential marketing has been associated with physical stores. But deepfake makes it possible to immerse consumers online. In the article "Experiential Marketing", Bernd Schmitt (February 2010), states that experiential marketing views consumers as emotional beings along with being rational individuals who want to experience pleasurable events and experiential marketing fulfils this desire by creating experiences which appeal to the senses, thoughts, feelings, actions and the ability to relate of the consumers. Thus, Deepfakes can allow advertisers to create an emotional bond with the consumers and give them delightful experiences with good brand recall.

Furthermore, Deepfakes can be used to create Hyper-personalised advertising campaigns. This hyper-personalisation allows consumers to see the product as an extension of themselves enabling psychological ownership. And according to Harvard Business Review, in the article, "How Customers Come to Think of a Product as an Extension of Themselves", author Colleen P. Kirk (September 2018), has found that when customers see the product as an extension of themselves, they are willingly to spend more money and buy more as well as advocate the products to their friends.

Apart from Deepfake advertising, advertisers in India have shown an inclination towards mixed reality, augmented reality and programmatic advertising. Augmented reality adds virtual objects in the real-world environment whereas Mixed reality not only adds these objects in the environment but also allows user to interact with these virtual objects as well as physical objects in the environment. While mixed reality and augmented reality marketing are also distinct from programmatic advertising in the sense that they do not use Artificial intelligence-based technologies, but combining AI with mixed and augmented reality has helped advertisers gain significant strides in experiential marketing, hyper-personalisation, retargeting and geo targeting.

Real-time purchase and sale of advertisements by an automatic auction mechanism is programmatic advertising. Programmatic advertising permits advertisers or agencies to buy ads on publishers' websites or apps with the help of a program and also allows advertisers to measure the Return on Investment. It automates the advertising process through the AI algorithm which evaluates consumer data like their behaviour and cookie data and uses it to determine the advertisements that can be shown to the consumers. Hence, programmatic advertising has surpassed the limitations of the manual process which were time consuming as it involved paper work and negotiations between the buyers and sellers of advertisements as well as costly and lacked the mechanism for measuring Return on Investment.

IV. CONCLUSION

While intended to be a pure research paper, it would be an honour if insights from this paper could have applications influencing the advertising industry. In the competitive markets, the analysis and findings from this paper may help reckon a few recommendations.

While consumers do find the Deepfake advertisements misleading, they also yearn to see entertaining content which is very localized and intimately personal and relatable. Advertisers in a populous country like India can practice micro-targeting advertising, which will be cost effective and optimise campaigns by connecting with consumers on the ground level.

A successful example of such market segmentation and personalisation is the Zalando 2018 campaign featuring model Cara Delevingne. The campaign produced 60,000 video messages for each village and town in Europe, with just one video shoot. They used the Deepfake technology to create alternative shots and messages and displayed each specific video for the specific intended location using Facebook's ad targeting. The campaign created awareness about how the remotest parts of Europe can have access to Top Shop fashion products with Zalando delivery. The results were a ginormous 180 million views and the sales for Top Shop products jumped by a massive 54%.

Hence, Deepfake not only eliminated the generalisation of customers and but also enabled effective customer segmentation on the basis of geographics. Moreover, it also reduced the in-house production and video shooting costs, as with a single video shoot, they were able to generate 60,000 bespoke video messages through Deepfake technology, bringing in cost efficiency.

Advertisers in India can therefore, use Deepfake for localised advertising and do micro-targeting to grab the attention of consumers in the heavily crowded market bursting with many and multifarious advertisements. It can help them reach the specific target consumers effectively and efficiently.

The global advertising market is expected to reach US\$ 875 Billion by the year 2026, with a predicted CAGR of 5.2% during 2021-2026, according to the report "Global Advertising Market: Industry Trends, Share, Size, Growth, Opportunity and Forecast 2021-2026" by IMARC group. With the increase in internet penetration and number of mobile devices, the scope of digital advertisements has increased. Tech savvy, career driven millennials, with increased disposable incomes and increase in the number of working women, all of these changes in the 21st century have opened new prospects for advertisers and marketers and broadened their target markets.

With the vastness of the advertising industry and the increase in the number of advertisements, advertisements have become ubiquitous and it is becoming difficult to capture the attention of consumers who are flooded with so many offline and online advertisements in a day. This poses a challenge for the advertisers who have to dynamically adopt new strategies, models and innovations to cut through the plethora of ads and reach their target consumers. Hence, advertisers have to offer more than the product to survive the competition. The key is customer experience. In this scenario, technology becomes a vital force for creating an impact on the consumers and attracting their attention.

To create these lasting customer experiences and ensure good brand recall, Deepfake is one such emerging technology which has the potential of helping advertisers break new barriers. Deepfake can help provide the much in demand experiential marketing opportunities, hyper-personalised advertisements, dynamic campaigns with influencers and also aid product ownership amongst consumers which increases sales. As said before, if the technology is used ethically, creatively and honestly by advertisers, it can allay the fear of manipulation amongst the consumers and ensure a delightful experience to them.

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