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Immersive Marketing & Measurement: How VR, AR, And AI are Transforming Customer Engagement Tracking



Abstract: - Immersive Marketing and Advertising Information Systems (IM&AIS) leverage VR, AR, and AI technologies to create engaging and personalized customer experiences. This paper investigates the potential of IM&AIS for quantifying and measuring brand engagement, loyalty, and purchase intention. We examine how IM&AIS utilizes data collection and user interaction within VR/AR environments to deliver targeted content and track consumer behavior. The paper then discusses the challenges of measuring the effectiveness of IM&AIS campaigns, including privacy concerns and integration with traditional marketing metrics. Finally, the research explored potential solutions and future trends in IM&AIS measurement, emphasizing the role of advanced data analytics and instrumentation in maximizing the benefits of immersive marketing.

Keywords: VR Marketing Measurement, AR Customer Engagement Measurement, AI-driven Marketing Analytics, Immersive Experience Data Collection

I. INTRODUCTION

The evolution of marketing and advertising has undergone significant changes over the past two decades. Marketing and advertising have moved from static imagery and messaging to an immersive experience, laden with user interaction and countless intangible elements. This "immersive experience" has been a broad term to encompass the shift from traditional media messaging and advertising to an overall experience with a brand or product. Interactive video games, online advertising, virtual reality simulators, and the integration of digital media in everyday experiences have all become facets of immersive marketing and advertising. With this movement, marketing is increasingly being viewed as an expendable feature of a product or brand, rather than as a separate entity or production. Immersive marketing will define a product or brand through experiences that will create an emotional attachment and association. This statement outlines one of the most significant differences between traditional advertising and immersive advertising: the attachment of emotion and experiences compared to the conveyance of a message. As the market continues to move towards the marketing of experiences, Immersive Advertising and Information Systems will be used in tandem, becoming indispensable features on marketing initiatives. [1]

II. UNDERSTANDING IMMERSIVE MARKETING AND ADVERTISING INFORMATION SYSTEMS (IM&AIS)

1. Definition of Immersive Marketing and Advertising Information Systems (IM&AIS)

Immersive marketing is a concept that is not entirely new, but has only recently garnered attention and interest. Immersion can be defined as the feeling of being surrounded by a certain environment. Immersive marketing aims to create a simulated environment through visual, aural, and physical stimuli embedded in a unique, multi-sensory (and usually interactive) experience in order to create a relationship between the consumer and the product. Immersive marketing strategies can be utilized within the marketing firm, as well as in cooperation with other firms. The degree of participation can vary from using a 3-D environment to package and promote a product to creating an entire event, such as a snowboarding competition, to associate the event with the product. Beer companies are often cited as using immersion strategies very well. Red Dog and Miller Lite both use various event promotions to associate their product with fun, excitement, and the thrill of victory. An emerging strategy in the field of immersion is the creation of branded entertainment, which involves the development of entertaining content, such as video games or short films, funded entirely by a brand to subtly associate the content with the brand. Immersive marketing is in essence, a long term brand strategy and it is more focused on emotion, experience and interactivity consumer and involving more to marketing. This strategy is taken in contrary to the traditional advertising and marketing strategies in the past. There are three levels of immersiveness: low, mid, and high. High immersive marketing is the most effective strategy and is what most of the market is aiming for today. High immersive experiences have high interactivity and a sense of presence. The more immersive the experience is, the higher the time and the commitment given by the individual towards the

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event or product. Immersive marketing and advertising information systems are put into place to help strategize and prolong the immersive experience and maximize on the commitment and spending by the consumer. [2]

2. Importance of Immersive Marketing and Advertising Information Systems

With products becoming more complex and a lot of media clutter in today's advertising and promotion, immersive marketing believes that when consumers interact directly with a product experience, they are more likely to form a purchasing intention due to ease of understanding and product satisfaction. Product simulation in immersive marketing also enables consumers to test a real product without the risk of damaging it or receiving injury during product usage. [3]

Immersive marketing also has its own unique selling points compared to traditional advertising and promotion. It seeks to create a long-lasting consumer experience and memory towards the product being marketed. The high level of consumer interaction in immersive marketing also leads to better understanding and attention from consumers towards the marketed product. This can result in positive brand recall and attitude. Ultimately, these objectives efficiently improve purchase intention among consumers. [4]

Highly interactive, involving, innovative, experiential, and consisting of multiple two-way communications between consumers and marketers, immersive marketing provides consumers with the ability to experience a product before buying it. This concept can also be applied using traditional media, where consumers' senses are surrounded by auditory or visual elements. Nowadays, technology has opened up a new and vast emerging way of immersive marketing using the internet. This approach blends a mix of virtual reality, augmented reality, and 3D animation to market and advertise a product. [5]

3. Evolution of Immersive Marketing and Advertising Information Systems

The main question is how did we get from traditional advertising to IMC? The evolution of advertising has taken us from ancient Egypt, where signboards were used to promote tradesmen, through to the rapid expansion of mass production and the innovation of radio advertising in the 1920s. It was during the war years that the development of persuasion, strategic bombing, and psychological warfare was utilized to propel the growth of advertising to the point where companies started to employ in-house advertising. Advertising agencies subsequently played a crucial role in the evolution of advertising; in 1842 Volney B. Palmer established the first American advertising agency in Philadelphia, and thereafter advertising agencies continued to develop through the innovative use of specialist sell and brand advertising. [6]

Since then advertising experienced continuous technological advancement and a parallel development of advertising theory, culminating in today's omnipresent digital media and IMC practice. The internet and ICT are undoubtedly the most significant factors in the evolution of advertising from traditional to IMC. Key aspects of the direct relevance of internet and ICT to IMC are the capabilities of customization and one-to-one communication: and of all forms of digital advertising, it is the immersive type which is most effective in engaging the consumer in this interactive environment. [7]

4. Components of Immersive Marketing and Advertising Information Systems

A wide variety of marketing and advertising information systems can be employed to enhance customer immersion. From the World Wide Web to Virtual Reality Modelling Language (VRML) technologies, the range of available systems is considerable. However, this study will focus on the most cutting-edge technology in immersive marketing and advertising systems, referred to as Immersive Marketing and Advertising Information Systems (IMAIS). Bearing in mind the industry implications this technology may have, it is important to realize the potential this technology has for changing the face of marketing and advertising. This technology is designed to improve customer satisfaction, memory retention, and overall learning experience. This is particularly relevant to advertising because customers who enjoy an advert are more likely to remember the product and feel a positive attitude towards it. IMAIS are designed to involve the customer in a memorable experience that will transfer into a purchase attitude and then a purchase behavior at a later date. This technology has obvious implications for the gaming and education industry and may extend to all multimedia in the near future. The basic conjecture is that higher immersion systems will foster a better experience for the user, with the general purpose of these systems to allow simulated activity, experience, and education to seem more realistic to the user. IMAIS are systems that change the usual way advertisements have been presented and therefore have implications for the future of advertising. This technology seems close to science fiction. However, considering the way technology is advancing, even in the last 5 years, it seems to be in the foreseeable future. Virtual Reality (VR), Augmented Reality (AR), and Artificial Intelligence (AI) are the cornerstones of these systems and are explained separately below. These systems are currently in their infancy and can only be found in bits and

pieces around the web, software, and gaming industries. VR and AI have been simulated in educational environments and some training simulators. [8]

5. *Virtual Reality (VR) Technology*

There are two main types of VR systems, fully-immersive and semi-immersive. A fully-immersive VR system is designed to place users within a simulated environment, which responds and changes in real-time as the user interacts. Because of the degree of interaction, users must be able to move around in a fully immersive environment. A fully immersive system usually consists of a head-mounted display (HMD) with 3D goggles and stereo earphones, a data-glove and/or bodysuit with position trackers. The Polhemus motion tracker is a common device used to track the position and orientation of a user in a fully immersive system. The user input gathered by these devices is used to control the user's 'avatar' within the simulated environment. The avatar is the graphical representation of the user. Semi-immersive VR systems are less complex, and by nature restrict the user to a limited area. These systems are typically used in a VR lab, with projects ranging from supporting design and engineering tasks, to using VR for 3D tele-conferencing. An example of a semi-immersive system project is the Virtual Reality Robotic Assembly cell, programmed to aid the training of mechanical engineering students for real-world scenarios. This project was carried out using the OpenGL utility toolkit and is being further developed to include interaction with the aid of a haptic device. [9]

6. *Augmented Reality (AR) Technology*

Augmented reality combines the client's present reality with a virtual one. This is achieved through recognition of a symbol, usually a black and white symbol, which then triggers the AR feature. This is currently being utilized for advertising and marketing purposes through the sale of AR postcards and recognition of product logos. Users can hold the physical product in their hand or touch the real-world postcard while their monitor displays a 3D computer-generated model that can be manipulated in real time. A user might rotate the card in reality, and the virtual 3D model will also rotate in real time, creating the illusion that they are moving the real product. [10]

An example of this is the AR Magic Mirror being developed by IKEA, in which a user points a webcam at a place where they would like to put a piece of IKEA furniture, and in their monitor's display, the piece of furniture will appear as if it were really there. IKEA claims that this will help to reduce the rate of dissatisfaction in their customers, as they will have a better understanding of what they want to buy and whether it is suitable for its intended place. AR tools such as this mirror have an advantage over real-life products and models in that they are cost and space effective. [11]

Another example is the Uses for Intelligent Mirrors (as shown in Figure 1):

The allure of a digital makeover lies in how simple it is to experiment and select "undo" if you're not happy with the outcome. In collaboration with ModiFace, L'Oréal released the Style My Hair app, which lets users transform into blondes (or any other hair color) on live video, at least virtually. The method creates a completely dimensional, realistic look by coloring hair strand by strand. Not a fan of blondes? Simply swipe the app to switch your color once more. When a colorist meets with a client to discuss their preferences, this technology let the customer see, quite effectively, how the color will appear on them before committing to the real thing. [30]



Figure 1. The Magic Of Smart Mirrors: Artificial Intelligence, Augmented Reality And The Internet of Things [30]

7. Artificial Intelligence (AI) Integration

AI integration is pivotal to enabling the immersive technologies of VR and AR to deliver value to the consumer in the marketing context. AI has the potential to produce extremely rich simulations by layering on learned details about how the real world works and how humans behave. The more an AI system knows about the world, the better it can tailor a virtual world to match the customer's mental model. For example, AI can learn patterns of consumer behavior and deliver a virtual simulation precisely tailored to what the consumer is likely to respond to. This simulation could, in theory, be a virtual store showing the consumer products that it knows the consumer is interested in viewing. AI can also automate the process of sorting through massive amounts of consumer data collected from VR and AR simulations to better understand behaviors and deliver products. For example, AI can automate the process of categorizing gaze data collected from a VR simulation of a store to make inferences about what types of layout are most effective for which types of consumers. This can greatly reduce the costs of understanding and improving marketing strategies through immersion. [12][13]

Artificial intelligence (AI) is the intelligence of machines and the branch of computer science that aims to create it. AI has substantial relevance to the study and practice of marketing (Sheth, 2016). AI has developed a notable capability to understand and replicate certain human behaviors. In recent years, companies are using AI to map consumer personas and using this technology to predict behavior, allowing companies to tailor specific marketing messages for specific consumer targets. Furthermore, AI is being used to automate and personalize marketing and the customer experience, providing the right information to the right person at the right time on the right platform – without human intervention. More specifically, AI is being used to match appropriate colors, context, layout, format, and tone of voice to build advertisement content by analyzing consumer behavior and learning from previous patterns. AI has enormous potential to create and add value for customers through improved marketing and advertising strategies. [14]

III. APPLICATIONS OF IMMERSIVE MARKETING AND ADVERTISING INFORMATION SYSTEMS

Personalized advertising campaigns A suite of software tools has been developed to provide real-time 3D graphics rendering, integrating market-leading capabilities for the creation, management, and targeted delivery of immersive 3D ads, and for performance-based ad analytics. These tools actively enhance a content delivery strategy, enabling the specific delivery of a brand or product-specific ad to be well-matched to a consumer or a situation. This can be achieved through a content recommendation engine that analyzes the choices of a customer and uses this data to predict future choices. Having an ad that changes in real time based on the specific user increases the effectiveness of that ad. It is far easier to capture a person's attention if an ad is showing something relevant to that person. But, the most effective campaign will tailor an ad to attract a broader range of customers, across various demographics. In order to do this, an ad analytics tool can be used to track the effectiveness of an ad and assess customer behavior in response to said ad. This analytics data can be used to understand what works and doesn't work, and will provide insight into what changes need to be made to an ad to make it more effective. [15]

1. Enhancing Customer Engagement:

Enhancing customer engagement: The essential driver behind immersive advertising is to engage clients. Using conventional media, a customer is exposed to multiple streams of messages and it's not clear whether the message has reached them. This is because most traditional media is passive in nature. For instance, in the print medium, although a reader may be looking through a magazine, the ad may be simply skipped. However, the use of techniques such as 3D interactive games or virtual reality building tours ensure that the consumer is actively involved with the product, and thus the ad, ensuring that the message has been received. With immersive media, results can be easily measured. This is possible because of the simulation's capability of tracking all decisions and actions made by a client. This information is very valuable as it can be used to determine a demographic profile of a potential consumer. Also, because the consumer is more involved with the product, brand loyalty can be fostered. For example, Esquire magazine generated a 29% increase in page views and a 43% increase in ad recall using an immersive 3D ad campaign (Wired 2008). [16]

VR in retail marketing

Magrabi is a Dubai-based eyewear company that wanted to give customers a more accessible way to engage with their products and services (as shown in Figure 2). And so, they chose to use a strategy of VR in retail. Program-Ace developed an application for Google Cardboard that featured a realistic and product-packed virtual storefront.



Figure 2. Magrabi Optical's VR store app with an immersive virtual retail experience for Google Cardboard [31]

The applications of IM&AIS are extremely diverse. The increasing rate of digitalisation and the rapid growth of the internet, it is timely that we consider the potential impact of IM&AIS given the ever-changing nature of contemporary marketplaces. While the web continues to evolve and grow, new opportunities to engage consumers in richer forms of dialogue that involve two-way, interactive communication are emerging. IM&AIS will provide marketers with more sophisticated tools for engaging their customers in dialogue and for developing deeper and more meaningful relationships with their customers. This is precisely what IM&AIS are designed to facilitate for its very philosophy is to use the technology to create vivid, memorable, and emotional connections between consumers and brands regarding product. So, for example, web-enabled virtual communities where IM&AIS create a digital environment that closely resembles the real world, will create a social arena in which consumers can interact with brands around the world, anytime and anywhere. In this case, life virtual environments might even have music playing, that is a good cue for a music event organizer to invite consumers to interactive chat within the music portal, where the organizer can get feedback while giving away freebies. [29]

A key feature of these opportunities is that IM&AIS are designed to be as consumer-centric as possible. Immersive media allow consumers to control their environments and the sequence in which they experience an offering. They are capable of making choices that will determine what happens next. This is something that will appeal to those who are adept in the avoidance of traditional advertising mediums and it's especially effective in getting and holding the attention of potential customers. A study conducted by Chrysler whereby they compared consumers who tried a virtual experience with one of their vehicles and non-virtual experience found out that it increased the likelihood of consideration by 60% and the amount of time spent configuring the car were increased tenfold. Self-configuration is another feature of IM&AIS that will increase customer engagement; intelligent product agents with 3D representation will assist customers in building a custom-made product with visual aids. Such endeavors will increase conversion rates from configuration to actual purchase. [17]

VR in real estate marketing

There are numerous compelling reasons to utilize virtual reality in real estate marketing, as demonstrated by Domotics. This company has successfully utilized VR to offer virtual tours of homes and properties, with positive results in terms of increased sales (as shown in Figure 3). Similarly, virtual tours can also be effective in marketing interior design and construction services through VR. [32]

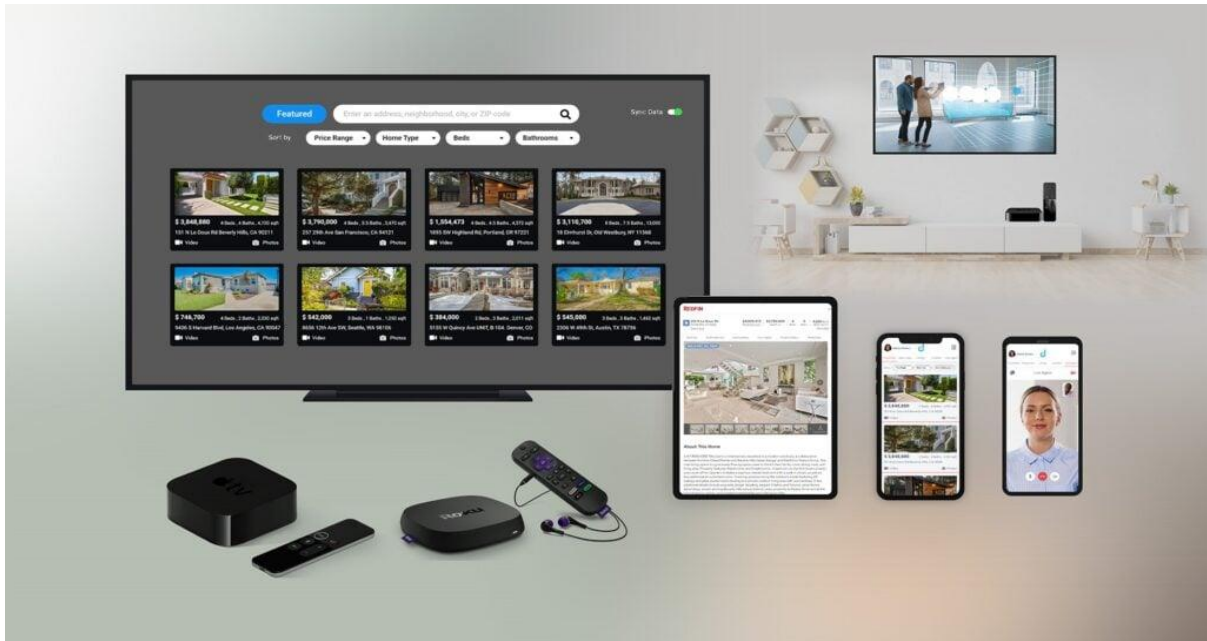


Figure 3. A novel real estate technological firm presents an immersive home viewing encounter that surpasses the customary listing [32]

2. Personalized Advertising Campaigns

Remark gives impression to be doing an effective personal selling evaluation. Using data mining techniques RSA can create scenarios of how their current and potential customers behave when purchasing insurance products. By using these scenarios RSA is able to simulate the behavior of the customer and understand root causes of why the customers acted in that way. This is key to understanding how to influence customers to behave in more profitable ways. [18]

Personalization designates what sort of effort the individual prospect is meant to receive. It is expected to convene the customer's needs and expectations and is anticipated to work towards a specific response. A very personalized approach conveys to the customer that the marketing communications are composed expressly for him. This feature is the key why personalization has been costumed the mass customization, because it simulates a one to one conversation between a seller and buyer on a mass scale (M. J. Etzel, B. J. Walker, 2007, p. 489). [19]

3. Interactive Product Demonstrations

Interactive product demonstrations using immersive advertisements represent a new form of advertising communication in which the consumer becomes actively involved in the ad, in the process generating a product or brand experience. Demonstrations have been defined as a form of marketing communication in which the marketer provides information allowing the consumer to try, evaluate, or test the product. Traditional demonstrations can take many forms, e.g. the food demonstration in a retail store, the travelling road show demonstration, the infomercial, or the free sample. These types of demonstrations generally involve manipulation of the product in real-time, often with the demonstration providing the marketer with an opportunity to close a sale. The transfer of this form of demonstration to the computer and internet environment is already occurring. Emerging from this trend are technology and computer-based companies that advocate the use of traditional demonstration marketing strategies and tactics within the online environment. This is seen, for instance, in the offering of free trial software and the increased use of television shopping channels using companion websites to sell products. While these marketing strategies are based around real-time manipulation of the product being demonstrated, in a broader sense they represent a migration of the demonstration-style marketing communication away from bricks and mortar and into the online environment. Finally, the most recent evolution of online demonstration marketing is the adoption of a more interactive form of advertisement in which the demonstration represents the entire ad and the consumer becomes actively involved in generating the product or brand experience. [20]

4. *Challenges and Future Trends*

However, greater data collection directly means greater invasion of privacy. In a case where a consumer's purchasing behavior can be tracked through an entire virtual environment, the potential available data to be collected is profound. This could mean a log of every movement and decision the consumer made in an attempt to influence his product purchase. This data will be very useful for the marketer but quite intrusive to the consumer and research ethics boards. This directly conflicts with the natural progression of marketing research. [21]

As marketing research and methods have improved significantly over the years due to better data collection and analytical methods, the demand for more ways to promote a product has also increased. This has led to a battle for advertising space within various forms of media. For example, the cost for a commercial space on TV has increased significantly due to an increased number of channels available, and other forms of advertising such as pop-ups on the internet and product placements in movies and video games have further increased the costs and competition. This has led to some innovative tactics for creating a more personable connection between product and consumer as an attempt to increase brand loyalty and product sales. This is the ideal environment for immersive marketing and advertising. [22]

With faster internet, larger bandwidths at a cheaper cost, and vast improvements in computer graphic techniques, there have been great advancements in immersive technologies, including immersive marketing and advertising. Although all these advancements give great opportunities to this relatively new industry, there are also major concerns from the public and technical standpoints that need to be addressed. Some of these concerns include privacy issues from the vast amounts of personal data collection now possible through these new technologies, integration with traditional marketing methods, and the potential of virtual influencers to replace the real thing. [23]

5. *Privacy and Data Security Concerns*

When the full implications of data collection and profiling in cyberspace reach public consciousness and government regulatory efforts, there is likely to be an intense backlash over the loss of privacy. Concern over privacy will always be an issue in marketing, especially in database marketing. There is thus a need for more explicit and enforced privacy principles for the internet. The direct marketing industry's attempts at self-regulation have produced limited success in part because of a stance that has sought to maximize industry freedom to collect and use information about consumers while minimizing regulatory constraints. New legislation has been or is being enacted in various countries to ensure that there are clear boundaries for what can legally be collected and with whom it can be shared and to give consumers greater knowledge and control over information kept about them. This will make the traditional practice of buying lists of contact details and data appending activity less viable with time. High-quality customer data will increasingly need to be proprietary. These legal and market-driven developments are to some extent at odds with the potential of immersive marketing insofar as the more elaborate data gathering tools embedded in immersive environments have conflicting implications with desires for consumer privacy. While virtual reality and gaming technology have been rapidly evolving and progressing, there are already challenges in adapting the existing laws and self-regulatory industry codes of practice to emerging forms of immersive media. The principles underlying the regulation may need to be different for media in which ads are delivered through virtual characters and placed within simulations of public places. The existing privacy legislation at the time of this writing may become outdated before immersive marketing really takes off. Measures to maintain privacy in immersive environments may need to include requirements for data minimization and constraints to prevent tracking of consumer behaviors across multiple simulations over long periods of time. For the individual company looking to use immersive marketing, there may be a need to future-proof investments by ensuring that data collection tools and consumer profiling capabilities are sufficiently flexible to adapt to changing regulatory requirements. This is not to say that immersive technology cannot be used in advertising, and there is potential for a win-win situation where a more entertaining and involving form of advertising can be matched with games and simulations designed specifically as branded content and an alternative to general-purpose entertainment simulations. However, striking the right balance between privacy protection and consumer benefits from immersive media will be a significant challenge. [24]

6. *Integration with Traditional Marketing Strategies*

It is believed that the current competitive environment for companies has led to a renaissance in the perspectives and disciplines of marketing by way of the changes in consumer preferences and customer desires. This often leads to an often-overlooked point that companies may have entered the era of marketing myopia. Rather than defining and addressing consumer needs and wants, companies are defining their goals through broad product-market terms; building too many goods that nobody wanted in the first place. Thus, global companies today face

the challenge of accessing the benefits of emerging technology and media in a quest to integrate or reinvent diverse marketing strategies to remain close to the consumer. The leap in technology has created a worldwide web of market research in the form of industry forums, web 2.0 sites, and a whole range of 'Software as a Service' (SaaS) options from data mining to online surveys. These methods, although valuable, are still disparate from a wide array of traditional marketing strategies which can still be cost-effective and efficient. There are new and innovative tools to integrate traditional marketing activities into a more comprehensive marketing process. Take, for instance, immersive virtual reality simulations for brand or product trials. Often these simulations can be a module to a game or a product feature on its own. An example would be Audi's Virtual Reality Car Configurator, where consumers can experience a 3D sports car environment and build the car to their preferences. This tool is not only an interesting product feature, it is also a simulative and more engaging alternative to the traditional showroom product trial, providing valuable insights and consumer feedback. This is in line with the consumer engagement marketing mix, which shifts the promotion of a brand through advertising to the active involvement of the brand with its consumers. Audi's virtual reality tool can be supported with a public relations event or viral advertising campaign and cell phone text-in competitions, linking consumers to online sweepstakes and more notably, offline activities with a chance to experience the virtual simulator. Audi can track consumer feedback and experience various consumer perceptions of the brand in all these activities. [25][26]

7. *Potential of Virtual Influencers in Immersive Marketing*

Research and academic opinion indicate that the future has strong potential in the usage of virtual personalities or fabricated spokespersons to advertise and sell products. An integrative plan utilizing digital marketing techniques and methods is an effective strategy in captivating the savvy online consumer. This is an appropriate indication of the future whereby immersive and interactive virtual worlds will play an increasingly important role in the consumer's life. According to Casswell (2006), one of the most recent and overt examples of brand placement within Second Life revolves around the appearance of specially designed regions and islands for brands themselves. "Companies rent or buy space for their own islands, instead of merely leasing a site, and they are asking for increasingly sophisticated marketing research, which Second Life is positioned to provide". An emerging case study in the utilization of a virtual personality that comprises an affective and cognitive feedback system with the consumer is found in the chatbot for Subway sandwiches, which can be found in the virtual world called Whyville. This chatbot is a personified Subway's "marketing research indicated teen characters would be receptive to talking with a cartoon character about healthy eating habits". The chatbot succeeded by offering a meal and health tips and advice to Whyville teens, by directly answering consumer questions about different Subway food products, and offering prizes for participation in Subway quests. This example of a virtual personality directly interacting with consumers to influence product contexts, attitudes, and purchasing behaviors reflects Steuer's observation predicting that marketing in virtual environments will be far more effective than marketing in the real world. He states "the ability to affect experience of the world will be the differentiator for success in competitive markets. In an increasingly global market environment, where product differentiation based on features and pricing is at best a short-term strategy, marketing in VEs as defined here will be the long-term strategy of choice. The viability of marketing in VEs and the ability of marketing efforts in VEs to affect the experiences of the world. Affecting real and individual customers in the real world is what any company is seeking from their advertising efforts, the place where advertising and promotion is most effective is where they will choose to invest. [27][28]

Rozy, Korea's initial AI-based virtual human, was developed by Sidus Studio X, a subsidiary of Locus, the top production company in Korea specializing in commercials, animation, film, and video characters (as shown in Figure 4). Possessing approximately 48,000 Instagram followers, Rozy was crafted by blending the most appealing features for millennials, along with nearly 800 facial expressions and movements obtained through 3D modeling technology from an actor. "During the initial three months of Rozy's Instagram launch, her 3D virtual model went unnoticed," stated the studio. [33]



Figure 4. Virtual YouTuber Rui appears on her YouTube channel "RuiCovery." (Screen capture from RuiCovery's official YouTube channel) [33]

IV. CONCLUSION

Immersive Marketing and Advertising Information Systems (IM&AIS) represent a significant paradigm shift in the marketing landscape. By leveraging cutting-edge technologies like Virtual Reality (VR), Augmented Reality (AR), and Artificial Intelligence (AI), IM&AIS create highly interactive and engaging experiences for consumers. These experiences foster deeper brand connections, enhance customer engagement, and personalize advertising campaigns. However, the widespread adoption of IM&AIS hinges on addressing critical challenges. Privacy concerns regarding extensive data collection necessitate the development of robust data security measures and clear consumer privacy regulations. Additionally, IM&AIS need to seamlessly integrate with traditional marketing strategies to maximize their effectiveness. The future of IM&AIS is bright, with the potential for virtual influencers to play a prominent role in immersive marketing campaigns. As technology continues to evolve, IM&AIS will undoubtedly revolutionize the way brands connect with consumers and create lasting brand loyalty.

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