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The Effect of AI-Driven Personalisation in In-Game Advertising on Player Engagement and Purchase Intentions

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ABSTRACT:
In-game advertising has really taken off as one of the most exciting areas in the gaming world, especially with the help of artificial intelligence and player data that personalise ad content to individual preferences. When ads are relevant and blend seamlessly into the experience, they can greatly enhance player engagement and create a positive impression of brands, boosting their chances of making a sale. Navigating the world of data privacy and technology certainly presents its challenges, but we can rise above them by emphasizing transparent advertising and strong data protection strategies. This paper explores cutting-edge research to understand how artificial intelligence-driven personalisation in in-game advertising affects player engagement and consumer behaviour, all while maintaining a seamless user experience. It also highlights key ethical and regulatory concerns, particularly around data usage. According to the findings, making in-game advertising effective in the future hinges on adaptive personalisation, user control, and a commitment to privacy regulations.

KEY WORDS:
artificial intelligence, artificial intelligence-driven personalisation, digital games, in-game advertising, player engagement, purchase intentions.

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Introduction

The rise in the popularity of digital games can be attributed in large part to the availability of platforms and technologies for game delivery (Baltezarević & Baltezarević, 2018). Through digital games, businesses may reach a certain demographic, encourage engagement, and subtly convey messages (Tuten & Solomon, 2013). Game developers are able to make profit from their inventions by selling ad space inside their games. While advertisements are displayed in different ways, they all seek to grab the viewer's attention without interfering with the player's gameplay. With a 12% increase in purchase intent, in-game advertising (hereinafter referred to as IGA) is a popular choice for marketing campaigns (Shrestha, 2024).

Traditional marketing strategies are losing ground to digital ones. Nevertheless, strategies need to be well-thought-out and innovative, as only then will they be able to help companies stand out from the competitors in the current competitive market and elicit the right response from customers (Baltezarević et al., 2023). The games bridge the gap between individuals of different ages and interests; because of this diversity, advertisers can reach a large number of potential clients. Usually not skippable, in-game ads are a smooth part of the gaming experience. Because of the interactive nature of the games, players can focus on the constantly present advertisement. Ads can target particular consumers because games typically have predefined audiences. More effective advertising and a higher return on investment (ROI) are the outcomes of precise targeting options (Ptyonetim, 2024).

Nowadays, IGA is commonly utilised on a variety of gaming platforms, including consoles, PCs, and mobile devices. It provides services to a number of industries, including automotive and fast-moving consumer goods (FMCG), that use IGA to test novel marketing strategies and target certain demographics. The IGA industry is dominated by North America and Asia-Pacific due to their substantial gaming populations and high levels of digital ad spending. Additionally, as more people play mobile games, emerging economies like Brazil and India are seeing an increase in the market share of IGA ("In-game advertising market", 2023).

Providing a highly personalised gaming experience is one of AI's most revolutionary features in digital games. As more gamers seek out customised content, AI's ability to personalise gameplay, increase engagement, and enhance retention is becoming ever more significant (Ünal, 2025). By 2025, the worldwide IGA market is expected to generate over 125 billion USD. China will generate the most income globally, with an anticipated total of over 52 billion USD in 2025. IGA is increasingly being recognised globally as a key strategy for companies trying to reach younger customers who are interested in digital entertainment ("In-game advertising – worldwide", 2025).

However, there may be issues with consumer protection and regulations when AI is used in IGA. Transparency is a key problem, as is the case with many AI policies. The Federal Trade Commission (FTC) and other regulatory agencies stress the importance of unambiguous disclosures in advertising. The FTC has released guidelines (FTC AI Guidance) warning against overstated or unsupported AI claims and emphasising that dishonest behaviour may result in enforcement actions. In order to preserve consumer trust and comply with regulations, companies must make sure AI-generated content is accurate (AI-generated ads must not deceive consumers) and that any AI involvement in content generation is sufficiently disclosed (Palfreyman, 2025).

Nevertheless, AI-driven security features also aid in safeguarding player information and money transactions. Deep learning (DL) models examine player behaviour and financial transactions to check for indications of account takeovers, phishing, or illegal access. An abrupt shift in a player's behaviour, like logging in from an unfamiliar place or spending money in an odd way, can be immediately addressed by the AI. In those circumstances, the account might be temporarily blocked or require additional authentication. These flexible security solutions ensure that user data is safeguarded during marketing and gaming while also complying with privacy rules. Mobile game marketers now have strong capabilities to protect financial interests and preserve a reliable experience for players in the realm of mobile gaming, thanks to advanced fraud detection and security powered by AI (Playablemaker, n.d.). This study is examining how AI-driven personalisation in IGA affects player engagement and their purchasing intentions. It aims to answer these important questions:

- RQ1: How is player engagement influenced by AI-driven personalisation?
- RQ2: How significantly does personalised IGA shape players' purchase intentions and brand perceptions?
- RQ3: Which forms of personalised in-game ads (such as rewarded videos, contextual billboards, and dynamic offers) are most effective in driving player engagement and purchase intent?

This study takes a qualitative, literature-based approach to its methodology. Rather than offering new empirical findings, it synthesizes and critically assesses existing scholarly and industry sources related to artificial intelligence-driven personalisation in in-game advertising (IGA), player engagement, and purchase intentions. The aim is to outline the current state of knowledge, identify key trends, and emphasize theoretical and practical

insights that have emerged from previous research. By performing a thematic analysis of secondary data, this study responds to the proposed research questions (RQ1–RQ3) by incorporating diverse perspectives from academic journals, industry reports, and real-world case studies. This strategy not only enhances the theoretical framework of the study but also provides a structured overview of the latest developments in the field.

In-Game Advertising: Definition and Conceptualization

The term IGA describes the positioning of brands in gaming environments, usually as billboards, posters, or sponsor signage in racing and sports games (Chang et al., 2010). A more modern definition of IGA states that it includes integrating advertising content into already-existing digital games, including banners, product placements, content sponsorships, interstitial ads, and video ads (Welden et al., 2025).

Digital games can incorporate self-/cross-promotion in a variety of ways, with varying degrees of explicitness and integration. Examples include the straightforward placement of the company logo within the gaming context, as well as references based on associations with text, graphics, and the motivations of game developers and their games in magazines, posters, secret rooms, and in-game arcade machines (Mago, 2016). IGA first appeared in the computer game *Adventureland* (Adams, 1978) in 1978, and it was subsequently made commercially available in 1991. It contained a self-promotional ad for *Pirate Adventure* (Adventure International, 1979), the sequel (Tassi, 2011). Many people point (e.g. Marolf, 2007) to the Japanese arcade version of *Pole Position* (Namco, 1982) as one of the first games with commercial IGA. However, this format has undergone significant change, particularly in the last few years, as a result of digital games like *Fortnite* (Epic Games, 2017) in 2017 (De-la-Vara-López & De-Marchis, 2024). Recently, IGA shifted from basic static formats, like billboards and banners, to more lively, interactive, and tailored ads that adjust to the player's situation and behaviour. This change has been driven by enhancements in network connectivity, real-time ad delivery technologies, and cutting-edge data analytics, enabling advertisers to modify ads even after a game is launched and reach specific audiences more effectively (Gopinath, 2025). *Pokémon Go* (Niantic, 2016) has really made a splash by transforming real-life Starbucks locations into exciting in-game hotspots, which players call "PokéStops" and "Gyms". This clever move connects the physical world with fun digital rewards. Similarly, to enhance its visibility during gaming events, *League of Legends* (Riot Games, 2009) has partnered with Mastercard to showcase their branding on banners and billboards at esports venues, blending the digital and real worlds (Mahler, 2025). Likewise, Red Bull's promotions, such as "Red Bull Rampage", serve as another great example; while they are indeed sponsored content, they provide a more engaging experience instead of just plain billboard ads (Mathies, 2018).

Four types of in-game advertising can be distinguished: associative, illustrative, demonstrative and value placement. Associative advertising involves ancillary visual and aural components (such as billboards) and is straightforward product placement. Illustrative entails engagement without a close examination of the brand or product. Key characteristics of the product or brand are interacted with by the player in the demonstrative type. Value placement is the most advanced kind of advertising integration in digital games

(Klein, 2009). Integrating branded content into a game's setting is at the heart of value placement in IGA. The primary focus is to guarantee that it does not disrupt the gameplay and feels like a natural addition to the gaming experience for players. This type of advertising is viewed as an essential component of the gaming journey, enhancing overall enjoyment. It boosts brand visibility, encourages user interaction, and can even affect buying decisions, making it a promising route for advertisers (Figas, 2025). Generally speaking, a digital game will only use a few numbers of distinct forms of in-game advertising; the most popular and frequent type is associative in-game advertising (Mago & Knapcová, 2015).

These days, IGA strategies fall into three primary categories:

1. In-Game (either directly, indirectly, or by some other means, the advertisement is incorporated into the game).
2. Around the Game (although not being in the game environment, the advertisement is an element of the gaming community).
3. Away from the Game (gaming-related pursuits, eSports, or streaming companies' purchase of ads) (Palla, 2023a).

IGA should not be mistaken for digital game product placement in order to prevent confusion. For example, it would be incorrect to attribute to product placement the protagonist's ability to interact with others or to wear an aesthetically pleasing item that could distort their image, such as a Spiderman costume (Aliagas et al., 2021). It is crucial to differentiate between IGA and product placement, even if it can be difficult to distinguish between the two at times. A common strategy in digital games is product placement, which lets consumers interact with things in real-world situations and implies support when a fictional character or celebrity uses the product (Kuhn et al., 2004). Digital games created by marketers for users to play, typically for free, are known as advergames. They typically offer immediate prizes, are brief, and are simple to play (Redondo, 2012). While advergames are games created specially to promote a company or product, IGA entails inserting ads within already-existing, non-advertising games (Terlutter & Capella, 2013).

According to studies, IGA may be quite effective, and the fact that both men and women are altering their media habits makes it clear that digital games have potential as a marketing medium (Herrewijn & Poels, 2014). A sizable population of digital game players is the target market for IGA. Different gaming genres and age groups may find these advertisements appealing. The audience for games, particularly mobile games, is expanding quickly and includes players of all ages and backgrounds. For instance, millennials (ages 23 to 36) are the most active group of mobile gamers, while Gen Xers (ages 37 to 55) are the second-largest group. Playing digital games is equally common among Generation Z (16-22 years old). Indeed, IGA allow marketers to reach almost any audience in a fun and engaging setting without detracting from the user experience (Ptyonetim, 2024).

It is projected that the IGA market would increase at a compound annual growth rate (CAGR) of over 14%, or over USD 6 billion, between 2023 and 2028. Many significant factors have a direct impact on the market's growth and tendencies. The exponential rise in the number of gamers worldwide contributes to the demand for immersive experiences. Additionally, the expanding partnerships between marketers and digital game developers have resulted in innovative approaches to dynamic IGA that increase player engagement and open up new revenue opportunities. The business is being further stimulated by the increasing popularity of mobile gaming. These patterns highlight the industry's dynamic nature and the importance of creativity and adaptability in meeting shifting consumer demands and market trends ("In-game advertising (IGA)", 2025).

Among the AdTech companies that specialise in IGA, the following stand out and deserve to be mentioned: Through IGA, advertisers can reach a wide range of people thanks

to Bidstack (Great Britain). The company priorities an uninterrupted gaming experience. Israel's Anzu.io is an IGA platform that incorporates non-intrusive advertisements into gaming. To improve client viewability, the company takes advantage of real-time data and programmable technologies. A programmatic trading desk based in France called Gamned! provides multichannel programmatic campaigns. Finally, approximately 3 billion personalised advertisements are delivered each month by the Canadian company RapidFire (Figas, 2025).

Through a unique and engaging brand introduction, in-game advertisements can help increase brand recognition. IGA gives marketers the ability to monitor a range of metrics, which aids in campaign optimisation and enhances outcomes. In-game ads have the potential to improve user perceptions of brands and foster a favourable experience. Furthermore, in-game ads that are imaginative and captivating aid in the brand's ability to more successfully influence users (Ptyonetim, 2024). The partnership between *Fortnite* and Air Jordans is one of the most effective examples of IGA. Bloomberg claims that the collaboration included two new, limited-edition skins (downloadable character variations that consumers can purchase), wearing Air Force 1s in a range of colours, such as the Chicago Bulls' black and red and the Los Angeles Lakers' purple and yellow. It advertised a brand-new racing game option in *Fortnite* dubbed "Downtown Drop". These temporary promotions gave partners access to an advertising platform with almost 250 million registered users while also keeping the game interesting (Palla, 2023b). In collaboration with iion, LEGO employed in-game banner advertisements to engage its two target demographics: collectors who are adults and youngsters. A range of COPPA-compliant digital games were used by LEGO to display ads in order to reach an audience that overlapped with its core supporters and gamers. Featuring a variety of LEGO sets to increase product awareness, the ad improved resonance with its diversified audience and achieved a 94.76% viewability rate ("In-game advertising examples", 2024). GumGum x Frameplay, a recent in-game campaign for the Hershey brand, dramatically improved ad recall for the OH HENRY! candy bar. Frameplay supported the OH HENRY! creative for the Hershey brand in a variety of contextually appropriate game genres, such as simulation, sports, and casual games. With nearly +16 points more mobile ad recall and +18 points more respondents who enjoy OH HENRY! candy bar recall, the campaign for the brand surpassed industry standards and demonstrated greater engagement and persuasiveness to the target audiences (Palla, 2023b).

AI technologies that monitor and analyse user behaviour in virtual environments can create personalised content that subtly shapes emotions, thought processes, and decision-making (Pashentsev & Sebekin, 2023).

As IGA continues to expand, AI technologies have become essential, providing real-time personalisation, context-aware messaging, and dynamic placements. This development is expected to lead to a more engaging and complex user experience, which is a big step away from the usual static ads we are all familiar with. It can be said that IGA has evolved into a strategic avenue for brand marketing, as well as a source of revenue. The following sections discusses how AI is reshaping and advancing this field through personalised ad experiences, with the potential to revolutionize user engagement and customer behaviour.

The Significance of Artificial Intelligence in Personalised In-Game Advertising

The extensive consumer data may be used by advertisers to guide their decisions and develop closed-loop marketing strategies as the gaming industry undergoes ongoing change. Gamers' behaviour reveals criteria that should be taken into consideration by both game developers and advertisers. Insights from consumer data can assist in addressing crucial questions such as the most popular game features, retention problems or indicators, areas where new in-game features can boost profitability, and which game genres to target when advertising a specific product category (Pyschny, 2022). Even in the education sector, the power of AI-driven personalisation is evident: if AI is integrated into digital game-based learning (DGBL), learning is more likely to adapt dynamically to each student's performance (Baltezarević & Baltezarević, 2025).

AI-driven personalisation on gaming websites takes the form of many visible behaviours that might influence how consumers interact with the content. For example, the platform might offer a bonus when a certain algorithm detects that a player is about to log off or that the player has just gone through a losing streak. The offer is frequently delivered quickly through personalised messages, free credits, or time-limited promotions that give users a financial incentive to use the platform again. However, bonus offers can change based on the particular combination of time, value, and content, as well as the distinct behavioural profile linked to each user, thanks to AI algorithms (Mihai et al., 2025).

Interstitial advertisements, or pop-ups that appear in between gaming sessions or levels, plus content sponsorship, are other components of IGA strategies. Character customisation in multiplayer games is one example, usually accomplished through the purchase of items or skins (Welden et al., 2025).

By anticipating which incentives or promos players might find most appealing, AI-driven systems might improve the efficacy of in-game offers and notifications. AI can provide precise recommendations by examining a player's past purchases and gameplay. For instance, it can provide a package offer based on previous purchases or a special discount on an item that is frequently purchased. Gamers can view fewer messages that do not interest them thanks to this focused strategy. According to industry sources, push notifications that are personalised with AI can increase click-through rates by as much as 40% when compared to non-personalised messages (Playablemaker, n.d.).

Dynamic ad placement takes segmentation to the next level by customising ads in real time. It uses smart predictive analysis techniques such as collaborative filtering and reinforcement learning. The aim here is to figure out which ad content or offer will resonate best with a specific group or even individual. It bases its predictions on recent actions, such as in-game purchases or the player's current level or location in the game. For instance, collaborative filtering can recommend products or bundles by examining the behaviour of users who share similarities with you. Meanwhile, reinforcement learning plays a role in determining the best times and options for ads, which can greatly enhance engagement and conversions. These techniques not only make ads more relevant but also help steer clear of the common issues that come with generic or poorly timed ads (Wu, 2023).

In order to allow new players to enjoy the game uninterrupted, developers frequently display banner and rewarded video ads first. They usually increase the frequency of interstitial advertisements later on. Based on how players interact with advertisements, developers can even customise the ad experience. For instance, they might display fewer interstitial ads to certain players if they observe that they engage with rewarded ads more frequently. Gamers on mobile devices are growing increasingly intolerant of aggressive IGA. While excessive IGA may yield short-term benefits, it is a surefire way to fail in the long run. Aggressive advertising tactics have the potential to irritate users, which can result in a large number of unfavourable reviews and significant uninstall rates ("In-game mobile advertising", 2024).

For example, *Fortnite* brings personalised advertising to life through exciting in-game events and unique cosmetic items that cater to players' tastes and previous purchases. The game's AI keeps an eye on how players engage and tailors offers, like limited-time skins or emotes, to match each player's individual style. This strategy not only ramps up microtransaction sales but also improves the overall gaming experience. It is a clear demonstration of how AI-driven personalisation can shape consumer behaviour by generating a sense of urgency and exclusivity, which ultimately increases the chances of purchases in the gaming world.

The gathering and analysis of user data is necessary for personalised advertising, and incorporating AI into the mix may make data privacy issues worse. Following data protection rules is essential. Examples of these laws are the General Data Protection Regulation (GDPR) in the EU and the California Consumer Privacy Act (CCPA) in the US. To protect user information, businesses must get express consent before collecting data, offer clear opt-out procedures, and make sure strong data security measures are in place. Significant fines and harm to one's reputation may arise from breaking these regulations, particularly in Europe (Palfreyman, 2025).

The ability of AI for developing ongoing, personalised influence campaigns can "far exceed human potential" and launch "continuous psychological-propaganda operations" that are always active (Proroković & Parezanović, 2023, p. 13). This insight reflects IGA's concerns about AI-driven personalisation, where algorithmic decision-making could ensure constant targeted exposures, ultimately enhancing player engagement and buying behaviour. Finding a balance between personalisation and privacy will be necessary in the near future as AI continues to impact IGA. Improving user engagement but also ensuring ethical use of data are priority challenges that the industry needs to address.

Understanding Player Engagement in the Framework of AI-Driven In-Game Advertising (IGA)

IGA is a growing segment of the gaming industry that focuses on players who are totally immersed in their games. Effectiveness, however, may be hampered by obstacles like incompatible devices and limited game compatibility. Advertisers search for methods to seamlessly integrate promotions into digital gaming experiences in order to maximise user engagement. As computers and players devices continue to evolve, there is a great

chance to monetise gameplay and enhance player experiences through targeted and non-disruptive ad placements ("In-game advertising (IGA)", 2025).

To effectively benefit from this opportunity, it is critical to understand the multiple nature of player engagement, which includes emotional, cognitive, and behavioural factors that determine how players interact with both the game and in-game ads (Syrjälä et al., 2020). According to the theory of engagement in interactive media, it is really important to place ads in a way that flows seamlessly with the game. When ads enhance the user experience, they not only boost retention but also improve how players perceive the game ("Growth in mobile gaming", 2025).

Customer engagement refers to the interactions and connections between companies and consumers, with a focus on building relationships, providing bespoke experiences, and nurturing loyalty through a variety of channels (Singha & Mukthar, 2024). Consumer engagement is crucial for gaming because it boosts many important areas, including product development, marketing opportunities, and monetisation (Rutz et al., 2019). Recent investigations into monetization within creative sectors reveal how digital revenue models can influence user behaviour and the design of digital game content. This perspective enriches our understanding of the media effects related to monetization (Pravdová et al., 2023). This insight is especially relevant in the context of in-game advertising, where monetization strategies significantly affect player experience and engagement. For instance, rewarded ads that pop up right after a player completes a level can effectively extend gaming sessions and provide a rewarding feeling, all while ensuring that gameplay remains uninterrupted (Melucci, 2017).

In addition to making money from in-app purchases, app developers can improve user experience to increase engagement by rewarding video viewing or providing pertinent content through in-game ads (Shrestha, 2024). This advertising strategy incentivises players by rewarding them for viewing full-screen advertisements. Users can unlock new levels, more lives, cash, and other in-game benefits after completing a 15-30 second video advertisement. Players are increasingly choosing rewarded video advertisements over in-app purchases. Further evidence of the efficacy of incentivised video advertising in increasing user engagement comes from the fact that 62% of developers say their implementation has improved user retention (Ahmad, 2024). According to Tapjoy's "Maximum impact report", if a user interacts with just one ad in the first week, their chances of staying engaged with the app after 30 days jump by four times ("Maximum impact report", 2017).

With an overall score of 78 out of 100 based on metrics including ad viewability, ad perception, and engagement, in-game video was found to be the most successful ad format. An immersion score of 64 and an impression score of 90 resulted from this direct engagement (Rees, 2023).

Case studies reveal that when players can choose their preferred ad formats and the frequency of those ads is kept in check, it not only reduces fatigue but also maintains high retention and enhances long-term satisfaction ("Advertising and user", 2023). 75% of businesses utilising AI for marketing have reported higher levels of customer engagement, according to a McKinsey analysis. Ads targeting optimisation and content generation automation are just two examples of how AI is changing how companies interact with customers and gauge the success of their marketing campaigns ("How AI is driving", 2025). AI, which is the same technology that enables visual-linguistic question answering and automatically captions images with text, can assist in revealing the relationships between advertisements and context (Hou et al., 2017), thereby increasing the efficacy of advertising.

According to studies, consumers assess the efforts made by advertisers to influence them rather than passively absorbing advertisements (Hirschman & Thompson, 1997). This is illustrated by the Persuasion Knowledge Model (PKM), which Friestad and Wright developed. It makes the assumption that targets, such as consumers, will employ strategies to respond to and defend against persuasion attempts when they are exposed to persuasive information produced by the persuasive agents (Friestad & Wright, 1994).

Maximizing user satisfaction and monetization opportunities hinges on understanding player engagement in the realm of AI-driven IGA. When ads are contextually relevant, personalised to individual players, and integrated smoothly into the gameplay, they can enhance the overall gaming experience rather than diminish it. The advancement of AI technologies will greatly enhance ad placement, player targeting, and engagement measurement, creating a more engaging and user-friendly advertising landscape.

Purchase Intentions and Consumer Behaviour in the Context of AI-Personalised In-Game Advertising

Advertising may have an impact on consumers' perceptions, which may influence their desire to buy the advertised goods. The favourable attitude that consumers have towards the product or brand that is shown in the advertisement is another indication of their purchase intentions or positive brand behaviour (Punyatoya, 2015). According to eMarketer, around 75% of users will watch an advertisement in return for money or in-app purchases (Dillon, 2021).

Recent studies have revealed that the interactive features of IGA play a vital role in shaping brand perception and driving purchase intentions. This is particularly true when there's a strong connection between the game and the product. When these engaging ads tap into our emotions and intellect, customers are much more likely to follow through with a purchase (Fuad & Yaprak, 2025). According to a Gameloft study (Rees, 2023), viewers of advertisements longer than 15 seconds are 23% more likely to buy the product being promoted, whereas viewers of shorter adverts are just 14% more likely to do so. Additionally, advertisements lasting more than 15 seconds increased brand image (11% versus 9%), consideration (9% versus 6%), and awareness (10% versus 1% for shorter ads). A "symbiotic relationship between the campaign's creative and its context" (para. 3) is identified in the report. When both are used well, the emotion they evoke can result in the development of a 'moment' that can foster a deep bond between audiences and brands.

According to Mehrabian and Russell's (1974) Stimulus-Organism-Response (S-O-R) paradigm, an organism's (person's) internal sensations or behaviour are initiated by external stimuli. These internal stimuli processing, which includes perceptions and interpretations of the surroundings that affect a person's emotions and choices, can be conscious or unconscious. This impact also sets off a feeling that prompts a reaction. By applying the S-O-R theoretical framework, researchers uncovered that brand attitude acts as a mediator for the positive impacts of advertisement congruity, interactivity, and low

intrusiveness on purchase intention. Essentially, this indicates that AI-personalised ads work best when they are seen as relevant and unobtrusive (Anubha & Jain, 2024). Furthermore, interactivity in IGA has been shown to dramatically increase players' propensity to make a purchase. This is particularly true when people perceive a significant connection between the game environment and the advertised goods, as well as a heightened sense of presence (Hussain et al., 2022).

By closely monitoring each player's actions and previous purchases, AI personalises in-game deals and packages. Following its prediction of the most intriguing upgrades or products for a player, the system displays time-limited, targeted promos or exclusive offers. These strategies have been demonstrated to favourably affect players' inclinations to make purchases. The AI gains knowledge from each player's interaction with these offers and modifies future recommendations and timing to enhance outcomes. By doing this, AI is used to maintain a vibrant and healthy in-game economy. Offers that align with players' interests are displayed to them, sustaining consistent revenue generation while preserving player confidence and game fairness (Playablemaker, n.d.).

In accordance with research on online personalisation, users were more likely to make a purchase when presented with time-sensitive offers that corresponded with their behavioural profiles. This suggests that the same kind of factors might be influencing choices in games too (Mihai et al., 2025). Additionally, studies using flow theory among Gen Z gamers demonstrate that when combined with immersive IGA formats, enjoyment, focused attention, and telepresence are favourable predictors of purchase intention (Jalil & Arif, 2022).

Purchase intentions have shown to be greatly affected by AI personalisation in IGA. Advertisements need to be subtle, relevant to the context, and emotionally engaging. When brands merge behavioural data with immersive and interactive advertising experiences, they can successfully turn interest into action and build lasting relationships with consumers. Adaptive, non-disruptive personalisation must be further refined to meet players' evolving needs and enhance their gaming experience.

Discussion and Conclusion

Digital environments for digital games are becoming more and more immersive and powerful, which has been greatly contributed to by AI, which has emerged as the new heart of shaping and improving IGA. The integration of AI into digital gaming ecosystems has not only changed the way ads are delivered but also transformed the very nature of user interaction and engagement. Real-time data analysis is achievable with the help of AI, thus enabling dynamic adaptation of content and hyper-targeted marketing strategies. In this way, ads can be fluidly adapted to the individual preferences, emotional states, and behaviour of the players. AI-driven IGA (when implemented effectively) can become a dynamic, engaging, and seamless method for connecting marketing professionals with players (while not interrupting the gaming experience).

This progress has many implications. Marketers and game developers can really take advantage of the increased monetisation opportunities that come from strategically placing ads in virtual environments. Whether billboards, branded in-game items, or award-winning video content, having that advertising space can significantly enhance revenue streams. This is particularly relevant as the fatigue of being constantly bombarded with traditional ads continues to grow and thus causes the opposite effect. Gamers, nowadays, increasingly expect personalised experiences with added value. Also, user

dissatisfaction can occur when ads are poorly integrated or too aggressive. While great progress has been made in reducing intrusiveness through more seamless and interactive formats, finding the balance between irritation and engagement remains a central challenge.

To directly address the research questions we raised earlier in this paper, the review uncovers several key insights. To start with, AI-driven personalised advertising in games is making a big impact on user engagement. It delivers ads that are not only super relevant but also aware of the context, which really boosts the gaming experience and monetization potential. The behavioural effects of these tailored ads are obvious, they encourage higher purchase intentions and enhance brand recall, especially when they are integrated smoothly and customised to fit players' preferences and skill levels. In conclusion, the review sheds light on crucial ethical and regulatory issues, emphasising the importance of transparency, compliance with data privacy laws, and giving players the power to manage their advertising experiences. This is essential for fostering trust and promoting long-term engagement. By bringing together existing research, this study deepens our understanding of the varied role AI plays in in-game advertising and provides insightful directions for future research and industry practices.

AI's application in IGA has a big impact on how customers behave and interact with brands. Ads that are personalised and interactive, crafted to align with the the interests, context, and skill levels of players, have been found to greatly enhance brand recall and encourage purchasing decisions. Yet, the same strategies that enable this level of precision targeting also raise important regulatory and ethical issues. Developers and marketers must comply with ever-tougher data protection laws (including the CCPA and GDPR), which demand responsible data handling, transparency, and user permission. Failure to comply with the regulations not only results in legal penalties but can also undermine user confidence and thus damage the brand's reputation.

Future directions in AI-driven IGA, from a design and strategy standpoint, are likely to prioritise three key areas: adaptive personalisation, ethical innovation, and how much control players have over decisions that affect gameplay and the game's narrative. AI is paving the way for more accurate behavioural segmentation and the delivery of contextual ads, which will enhance ad relevance and minimise disruptions. By giving users more control over their ad experiences, like letting them choose their favourite ad formats or decide how often they see ads, we can really enhance their satisfaction and build long-term loyalty.

As AI-powered personalisation and neuromarketing strategies continue to evolve at a breakneck pace, we're starting to see a variety of ethical challenges emerge in the world of in-game advertising. These challenges often focus on the use of emotional triggers, biometric responses, and behavioural cues, which can easily cross the line from acceptable advertising into manipulation (Goncalves et al., 2024). This situation prompts crucial discussions about informed consent, personal autonomy, and the dangers of preying on vulnerable users (Alsharif et al., 2025). It's essential for future research to look into ethical frameworks and regulatory measures that promote transparency, offer meaningful opt-out choices, and ensure responsible data practices.

Moreover, it is becoming increasingly crucial to use AI in advertising in an ethical manner. Maintaining user trust hinges on being open about how personal data is handled and having solid feedback systems in place. As the gaming industry continues to change, it's becoming increasingly important for digital game developers to collaborate closely with marketing and AI professionals. Aligning monetisation strategies with players' genuine experiences is key. For marketers, this means stepping away from outdated, static messages and embracing livelier, context-aware interactions that respect the gaming

atmosphere. The challenge, however, is to create ads that feel like a natural part of the digital gaming experience rather than an interruption.

In summary, AI-driven personalised advertising in digital games is a revolutionary advancement in digital marketing and interactive entertainment. If personalised advertising is executed thoughtfully, it can truly resonate with consumers while keeping their gaming experience smooth. As the industry continues to advance, its effectiveness will be shaped by not just technological innovations but also by ethical considerations, a focus on user-centred design, and compliance with regulations. In the future, IGA plans to integrate technology, creativity, and responsibility even more effectively, creating engaging personalised advertising experiences in the vibrant world of digital play.

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