ECONSTOR
Make Your Publications Visible.

A Service of

ZBW Leibniz-Informationszentrum Wirtschaft
Leibniz Information Centre for Economics

Klose, S.; Truong, N. A.

Article

The effectiveness of in-game advertising in mobile games

Research Journal for Applied Management (RJAM)

Provided in Cooperation with:
International School of Management (ISM), Dortmund

Suggested Citation: Klose, S.; Truong, N. A. (2022) : The effectiveness of in-game advertising in mobile games, Research Journal for Applied Management (RJAM), ISSN 2701-6633, BoD – Books on Demand GmbH, Norderstedt, Vol. 3, Iss. 1, pp. 1-36

This Version is available at:
https://hdl.handle.net/10419/324722

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.

WWW.ECONSTOR.EU

Mitglied der Leibniz-Gemeinschaft

Klose, Sonja; Truong, Ngoc Anh

The effectiveness of in-game advertising in mobile games

Highlights

- In-game advertising can be an alternative to traditional mass media
- In-game advertising positively influences gamers attitudes towards the ad
- In-game advertising exerts positive influence on brand equity
- In-game advertising has a positive impact on brand awareness and brand image
- In-game advertising positively influences perceived quality and brand loyalty

Abstract

Purpose: This study aims to investigate the effectiveness of branding through mobile games with in-game advertising (IGA). The concept of in-game advertising will be linked with game experience, game engagement, brand attitude, and brand equity to demonstrate its effectiveness empirically.
Design/Methodology/Approach: An online survey is conducted to help collect attitudinal responses of gamers about the collaboration between a mobile game and a beverage brand. The conclusion is drawn based on hypotheses testing using the Partial Least Squares Structural Equation Modeling (PLS-SEM) technique.
Findings: The results show that in-game advertising positively influences player experience and game engagement of players as well as brand attitude and brand equity. Further, brand attitude plays an important mediating role in the relationship between in-game advertising and brand equity.
Research implications: In-game advertising is a potential alternative to traditional media. For game publishers, in-game advertising can help improve player retention by enhancing the enjoyment, hedonism, and realism of their gameplays. For brands, in-game advertising possibly improves brand equity by positively influence people's attitude towards the brand.
Limitations/Future research: The research contains some limitations regarding the scope of the study, stimuli selections, and sample size. Researchers can consider some possible directions for their future research about in-game advertising, such as examining its influence on gamers' behaviors, investigating its influence in different contexts or on different perspectives.
Originality/Value: The results of this study provide answers to the undiscovered effectiveness of in-game advertising in mobile game contexts. Thus, it makes a significant contribution to the holistic picture of advertising in digital games.

Keywords: in-game advertising, iga, mobile games, consumer-based brand equity, brand equity, game experience, game engagement

1 Introduction

Gaming, and mobile gaming, in particular, has continuously achieved meteoric growth in the past few years. While many industries are suffering and struggling to survive the impact of Covid-19, the global game market is expected to generate $175.8 billion in 2021 and reach $218.7 billion in 2024 (Newzoo, 2021) with a Compound Annual Growth Rate (CAGR) of 7.5%. Furthermore, the number of people spending time on digital games is also increasing more than ever before with 2.96 billion players worldwide by the end of 2021, which means more than one-third of the world population was involved in digital games at that time (Newzoo, 2021).

Over the past decade, mobile gaming has dramatically surpassed all other gaming segments to become the biggest segment in terms of revenue and players. Market research experts claimed that mobile gaming would continue to be the most dominant and fastest-growing game segment in the upcoming years. Revenue generated by mobile games was predicted to hit $90.7 billion by the end of 2021, with a year-on-year growth of 4.4% (Newzoo, 2021). Furthermore, people's appetite for mobile games is also reflected by the fact that mobile E-sports has entered the upper echelon and is expected to take over the previously dominated PC market (Wijman, 2021). However, game-based marketing still received little attention from marketers despite the fact that it can be an alternative digital marketing strategy that offers marketers and advertisers more opportunities to enhance digital consumer experience or enjoyment (Smith, 2020; Yoon, 2019).

The most common approach of advertising when it comes to mobile applications is in-app advertising. Nevertheless, in-app advertising has always been interruptive in nature, which can in turn spoil the user experience (Paddon, 2019). Further, with the decision to grant users the choice to block the Identifier for Advertisers (IDFA) in the iOS14 update (September 2019), Apple has significantly restricted advertisers from tracking user data for customizing in-app ads and measuring advertising effectiveness (Emery, 2021). Consequently, many titles that predominantly monetize through in-app ads have been severely impacted as their business model relies on these revenue streams as opposed to charging users for playing the game (Schöber & Stadtmann 2020). In this context, in-game advertising (IGA) appears as a more sophisticated advertising practice because of its strong first-party data pools; targeting customers with relevant messages and content can become so much more efficient – without relying on identifiers and third-party data (Sondhi 2021). One direction IGA is heading is contextual targeting to maintain relevance with customers. Contextual targeting's ability to connect in a relevant way with players based on what they are viewing, versus their personal data, will continue to be a safe targeting alternative amid a quickly evolving privacy landscape (Roy 2022). Apart from providing a seamless gaming experience to players, IGA also allows titles to swell profit with many collaborative opportunities. This practice is especially relevant for games that value user experience and do not exploit revenue from in-app advertising. For marketers, in-game advertising cannot only promote the brand directly to players but also place an indirect effect on millions of E-sports fans or viewers of content creation platforms such as Twitch, Facebook streaming, Youtube, or Tiktok (Seo et al., 2018).

With these advantages, branding through mobile games with IGA can become a trend in the future. However, IGA is still an uncharted territory in both practice and research (Terlutter and Capella, 2013). Just a few studies have looked at the impact of IGA on customers in the literature. Further, research to date concentrated only on computer and console games. Studies focusing on advertising in mobile games have been substantially neglected.

With the primary purpose of investigating the effectiveness of the branding strategy that leverages blended advertisements in mobile games, this paper will attempt to address the following research questions using the research model depicted in Figure 1. Firstly, how IGA influences players' attitudinal responses with regard to their game experience, game engagement and brand attitude. Secondly, how IGA influences player evaluation towards the integrated brand by examining the players' responses towards brand equity.

2 Theoretical framework

2.1 In-game advertising (IGA)

IGA refers to the incorporation of product or brand images into the digital game environment in either a subtle or a prominent manner (Terlutter and Capella, 2013). The most important feature distinguishing in-game ads from in-app ads is that they are not clickable and do not lead users to any landing pages or apps outside the current game environment (Yerukhimovich, 2020). IGA can be implemented under various forms such as sponsorship deals, real-world analogs, brand placements, branded music and sounds, branded characters, and brand-related cheat codes.

Many advertisers and scholars have expressed confidence in the superiority of IGA compared to other advertising media. IGA has the advantage of appearing time, which means players are exposed to brand images in the game longer than in typical video commercials (Yang et al., 2006). Moreover, the average time that gamers invest in one game title is 30 hours (Nelson et al., 2004), which is much longer than in a movie. With the benefit of high replay value, the frequency of advertising repetitions in each game session is considerable (Herrewijn and Poels, 2017). Apart from that, IGA possesses an outstanding advantage of brand placements that is not disrupting the player's experience, unlike the other interruptive advertisements. Moreover, gamers reported that they appreciated the presence of authentic brands because they brought a sense of familiarity, added authenticity to the game scenarios, and enhanced the entertainment value (Nelson et al., 2004). Thus, IGA is considered an element that offers some added verisimilitude to the virtual environment of games (Thomas and Stammermann, 2007; Nelson et al., 2004). Finally, interactivity is the key characteristic that makes games stand out from the traditional means of communication. In games, people can feel, control, and interact with a brand (Nelson, 2002). Past studies have discovered that such interactivity has a substantial impact

on IGA efficacy (Nelson, 2002) and benefits brand attitude and brand awareness (Escalas, 2004; Herrewijn and Poels, 2017).

Attitude toward ads has been regarded as a standard measure of advertisement effectiveness as it determines the consumer's likelihood of considering, committing to, and purchasing a brand (Eastin and Lee, 2020). Attitude towards advertisements is also described as an individual's inclination to respond in a favorable or unfavorable way to a particular advertising content (Muehling and Laczniak, 1988). For years, research has been carried out to examine player attitudes towards ads in general and IGA in particular. In a study in 2002, Nelson confirmed that IGA was generally viewed positively by gamers. Furthermore, participants in her study also agreed that IGA contributes to the game's realism and that they did not find it misleading or invasive. Additionally, people who have a negative attitude towards general advertisements seem to present a favorable attitude towards ads purposefully programmed into games (Molesworth, 2006).

The effectiveness of IGA on games and integrated brands has been studied for years and has presented contradictory results. For example, in an attempt to examine the effectiveness of interactive brand placement in an online role-playing game, Reijmersdal et al. (2010) found that children's attitude toward the game is positively affected by interactive brand placements. This finding was contrary to the prior research by Mau et al. (2008). When trying to discover the effects of IGA on familiar and unfamiliar brands in a first-person shooter game, they surprisingly found that in both cases, IGA negatively affects players' attitudes towards the game. The player's attitude towards the game will then correspondingly affect the player's attitude towards the advertised brand.

2.2 Game Experience

All famous and successful game titles share a common point: a large player base. A good gaming experience is an imperative element in convincing players to continue with a game (Choi and Kim, 2004). Furthermore, positive emotional experience has been proven to foster player engagement and increase player loyalty (Su et al., 2016). In addition, research by Cheung et al. (2021) suggested that game owners are able to strengthen not only loyalty but also in-game purchase intentions by enhancing the in-game experience. Reversely, when players' expectations about optimal experience are not fulfilled, they can easily surrender, switch to competitions or even boycott the title (Pelsmacker et al., 2019). For those reasons, optimizing the player experience is always the top priority of all game companies.

Lately, gaming experience or player experience (PX) has been widely used in studies about games. It refers to the experience that a player has during the process of playing games. Evaluating experience entails assessing the user's subjective opinion because it is characterized as personal and subjective (Calvillo-Gámez et al., 2010). Pleasure, arousal, and frustration are some of the most common emotions possibly evoked by digital games (Herrewijn and Poels, 2013). However, playing games is ex-

pected to bring a joyful experience (Calvillo-Gámez et al., 2010). Therefore, game enjoyment is a concept that has received much attention in research and practice to serve the purpose of examining and improving the player experience. Enjoyment is also considered as a factor that contributes to the success of IGA. In particular, understanding and managing variables that make the game more enjoyable would help improve the effectiveness of IGA, which may consequently lead to good sentiments toward the integrated brands (Moulard et al., 2019). Most game studies agree that the hedonic aspect of the game is an essential factor in determining enjoyment (Moulard et al., 2019).

Past advertising studies already showed that player experience affects the way people process the in-game ad. For instance, Coulter (1998) documented that players in high involving and arousing game contexts will have lower brand recall and recognition. The positive game experience was presented to have a positive influence on brand attitude (Owolabi, 2009), recall of brand (Lee and Sternthal, 1999), or IGA effectiveness (Herrewijn and Poels, 2013). However, studies investigating the influence of IGA on player experience are still neglected. One of the few studies considering this aspect is Nielsen's research stating that IGA barely affects game experience. 82% of the respondents agreed that games were exactly as entertaining with advertisements as they were without them, and over 60% felt the ads caught their attention, made games more realistic, did not interrupt the game experience, and were promoting relevant products (GamesIndustry International, 2008). In terms of attitudes, however, a study conducted by Kim et al. (2016) found that high prominence ads within mobile games produced more negative effects on attitudes toward the game. This study aims to further examine the impact of IGA on game experience with the following hypothesis:

H1:	*IGA has a positive effect on game experience.*

2.3 Game engagement

Engagement in digital games is a broad topic that covers a diverse range of studies, including subjective experience, physiological responses, motives for playing games, game usage, game market and player loyalty, and the impact of game-playing on life satisfaction (Boyle et al., 2012). These categories focus on different stages in the engagement process, so the proposed concepts are also very diverse and different. Among them, the concept related to the subjective experience of people when playing games is most prevalent. However, this study will consider game engagement as the player's commitment to the game. This approach avoids conceptual duplication with game experience and is essential in helping game publishers evaluate the effect of IGA on the appealingness of their product.

Nojima (as cited in Shibuya et al., 2017) suggested that a game service consists of three stages that are vital to its success: the hook, retention, and monetization. The hook concerns how the game attracts new players and can be measured by individual game download counts (Che and Ip, 2017). Retention refers to the ability that the game can keep the player playing continuously (Nojima, as cited in Shibuya et al., 2017). Monetization relates to how well the title can generate revenue for game publishers (Che

and Ip, 2017). Depending on the characteristics of the game, game publishers will apply different business models such as freemium, premium, ad-supported, or hybrid. However, their primary stream of revenue is derived from two groups: gamers (via game purchases and in-game goodies purchases) and advertisers (via advertisements) (Scolastici and Nolte, 2013).

It is clear that IGA does not have a direct effect on the download rate of a game because the players can only interact with in-game ads after having the game downloaded and experiencing it. Therefore, the download rate will not be examined in the latter parts. The effect of IGA on player retention can be assessed through mobile game usage in terms of frequency of playing, time, and effort that players would invest in the title. There is a commonsense assumption that the more people love playing games, the longer they play (Boyle et al., 2012). In addition, the impact of IGA on a game's profitability will be evaluated through players' purchase intentions of branded items. Research to date only examined the influence of well-executed advergames on player experience and future intention to play (Peter and Leshner, 2013). Studies on such effect of IGA is missing. While the influence of IGA on general attitude towards games is still debatable, analyzing its influence on more detailed aspects such as player experience, game usage, and purchase intention will provide valuable insights for both researchers and practitioners. The hypothesis of IGA influence on game engagement is formulated as follows:

H2:	*IGA has a positive influence on game engagement.*

2.4 Brand attitude

Attitude towards a brand or brand attitude was described as an individual's inclination to respond to a particular brand in a favorable or unfavorable way. Consumers tend to purchase items for which they have positive sentiments (Muehling and Laczniak, 1988). Studying the influence of IGA on brand attitudes has sparked tremendous attention from the academic community. The influence of IGA on brand attitude was investigated with a multitude of approaches, such as attitude towards ads (Mackay et al., 2009; Nelson et al., 2004), game-product congruity *(Peters and Leshner, 2013),* placement proximity *(Peters and Leshner,* 2013), ads characteristics and formats (Reijmersdal et al., 2010; Herrewijn and Poels, 2017; Herrewijn and Poels, 2018), game difficulty (Herrewijn and Poels, 2013), brand familiarity (Mau et al., 2008; Herrewijn and Poels, 2018), and so on. In general, the results of the above studies are consistent in presenting a positive effect of IGA on brand attitude. This finding implies that the practice of integrating brands in games possibly enables companies to achieve a bifocal goal of acquiring new customers and retaining existing ones. Based on what was discussed, it can be hypothesized that:

H3:	*IGA has a positive influence on brand attitude.*

2.5 Brand equity

David Aaker (1991) definition of brand equity as "a set of brand assets and liabilities linked to a brand, its name, and symbol," has gained significant attention from academia. He also mentioned that the set consists of brand loyalty, name awareness, perceived quality, brand associations, and other proprietary brand assets that can augment or depreciate the value given by a product or service to a company and/or its consumers (Aaker, 1991). Although there are many different views and approaches, brand equity is approached based on two main perspectives: financial perspective and consumer-based perspective (Kim et al., 2003). In particular, when the financial perspective underlines the "financial value that brand equity provides to the firm" (Nguyen et al., 2013), the consumer-based perspective aims "to determine how consumers respond to a brand" (Hanaysha et al., 2013). Based on consumer perspective, brand equity has been defined by Keller (1993) as "the differential effect of brand knowledge on consumer response to the marketing of the brand." Adopting consumer-based brand equity (CBBE) in research does not mean recognizing the financial value of a brand is unnecessary, but understanding how consumers respond to the company's marketing efforts would provide more practical insights for the management board (Faircloth et al., 2001). Thus, the term brand equity used in this study from now on will refer to CBBE.

Simply said, brand equity can be viewed as an individual biased behavior towards an object, and brand attitude is his/her summary evaluation of that object (Faircloth et al., 2001). Farquhar (1989), Aaker (1991), and Keller (1993) believed that brand equity is positively influenced by favorable brand evaluations or attitudes. However, in an attempt to test these arguments from the above scholars about the effect of brand attitude on brand equity, Faircloth et al. (2001) found that brand attitude had no direct effect on brand equity. Instead, there is a possibility that brand attitude affected brand equity indirectly through brand image (Faircloth et al., 2001). This result may be affected by the author's use of purchase intention as a measure of brand equity rather than other common constructs suggested by other scholars such as brand awareness, brand image, perceived quality, brand loyalty (Aaker, 1991; Keller, 1993; Yoo and Donthu, 2001). Purchase intention is the final purpose of transmitting any marketing efforts (Lee et al., 2017). Nevertheless, the relationship between brand attitude and purchase intention is not always clear (Spears and Singh, 2004). For that reason, this research will measure brand equity as a multidimensional construct that consists of brand awareness, brand image, perceived quality, and brand loyalty.

2.6 Brand Awareness

Among the studies on the influence of IGA on gamer's evaluations, the number of studies focusing on brand awareness outnumbers the others. Brand awareness is defined as consumers' ability to recall or recognize a brand under different circumstances (Keller, 2013). Similar to brand placements in television and movies, one of IGA's objectives is to enhance brand familiarity within the target audience so

that they will be more likely to remember it (Nelson, 2002). In the context of IGA, studies often examine the IGA's effect on brand awareness under three primary constructs: brand recognition, brand recall, and brand memory. Assessing the effect of IGA on brand memory is also relevant because recognition and recall of a brand occur as a result of storing and retrieving data in one's memory (Johnstone and Dodd, 2000). For instance, Yang et al. (2006) confirmed the influence of IGA on brand memory by comparing the ability to complete the word-fragment test about the brand's names between people playing a soccer game, racing game, and not playing any games. On the other hand, when exploring the player's ability to recall brand under different settings, Nelson (2002) found that the game players are able to recall brands in both short- (25 - 30% of the brands) and long-term (10 - 15% of the brands). This is also true for those who played the game for the first time and in a short period. Consistent with Nelson's study, the research of Mackay et al. (2009) and Herrewijn and Poels (2017) also agreed that engaging with a brand while playing a game improves one's ability to recall and recognize that brand when requested.

However, a project by Chaney et al. (2004) demonstrated a fairly low recall rate among their respondents (5 - 20% of people can recall). This result can be explained by a model of Lang (2009) called LC4MP or the Limited Capacity Model of Motivated Mediated Message Processing. This model contends that a person's capacity to comprehend information is limited because he/she only has access to a finite pool of cognitive resources at a time (Lang, 2009). This model suggests a significant implication for studying the impact of IGA on brand awareness. In a digital game environment, players are often overwhelmed with a plethora of tasks and stimuli that simultaneously vie for their attention. Obviously, players usually dedicate their cognitive resources to activities that are most important to them (i.e., enjoy the gameplay, control the characters, etc.), namely their primary task. Hence, getting a brand recognized and stored in mind is not easy in such an engrossing gaming context. Given these conflicting findings, it is interesting to extend the study of such an influence of IGA on brand perception in a mobile game context.

2.7 Brand Image

Brand image is a customer's impression about the brand and is reflected by a set of brand associations that they stored in mind (Aaker, 1991; Keller, 1993). A brand association is anything linked to a brand that stays in one's memory, such as brand attributes (price information, packaging, etc.), brand benefits (functional benefits, experiential benefits, and symbolic benefits), and brand attitudes (as described in the above section) (Aaker, 1991; Keller, 1993). The reason for including brand image as a component of brand equity arises from its important role in determining the differential reaction that creates brand value (Kim et al., 2003). Further, a strong brand image will support a brand positioning in creating a competitively attractive position (Aaker, 1991).

The number of studies exploring the effect of brand placement in general and IGA in particular on brand image is significantly scarce. However, researching in the context of television brand placement, Reijmersdal et al. (2007) found that placing a branded item in a television program can have an influence on that brand's image. In addition, the level of influence depends on the frequency of brand exposure. In line with this finding, a study by Reijmersdal et al. (2010) showed that interactive brand placement in an online game resulted in more positive attitudes toward the game, higher top of mind awareness of the brand, more positive brand images, and more favorable behavioral intentions.

2.8 Perceived Quality

Perceived quality is the perception of customers about the overall quality of products or services of a brand without any knowledge of detailed information. A brand that achieved a satisfactory level of perceived quality will have an advantage over its competitors, especially when consumers do not have enough motivation or are not able to search and compare alternatives (Aaker, 1991). More specific, perceived quality is a factor that has a significant impact on consumers' purchasing decisions. Thus, high perceived quality is a sign of effective marketing and advertising practices (Aaker, 1991).

Similar to the case of brand image, research focusing on perceived quality in the IGA context is sparse. With an intention to examine the influence of IGA on brand equity, Yang et al. (2015) inspected IGA influence on perceived quality as one of four brand equity dimensions, together with brand awareness, brand association, and brand loyalty. By comparing the outcomes of two groups of people playing a game on a social network with IGA and without IGA, the authors validated the consequential impact of IGA on perceived quality.

2.9 Brand Loyalty

Brand loyalty is a consistent and robust commitment to purchase or repatronize a product or service that belongs to a preferred brand in the future (Oliver, 1997). It can be said that brand loyalty makes customers refuse to switch to other competing brands under situations such as price changed or product features changed, thereby increasing brand equity (Aaker, 1991; Yoo et al., 2000). Moreover, existing customers may support in acquiring new ones by recommending a brand to friends and family (Bobâlcă et al. 2012). In addition, brand loyalty can help companies predict future revenue streams based on habitual buyers and thus can be a measure of future profitability and a brand's success (Aaker, 1996). However, unlike the other dimensions of brand equity, brand loyalty is qualitatively distinct because of its close link to consumer's use experience. While brand awareness, brand image, and perceived quality of a brand are the dimensions that customers can roughly evaluate from the very first encounter, brand loyalty is impossible to achieve without prior use experience (Aaker, 1991).

Although the literature has presented that brand loyalty cannot occur when customers have not bought and used the brand's products, many studies from various areas have indicated that a positive

attitude towards a brand can exert an influence on brand loyalty (Liu et al., 2012; Krystallis and Chrysochou, 2014; Bozbay et al., 2018). Attitude towards a brand can be developed not only from cumulative gratification during usage occasions (Oliver, 1997) but also from evaluations towards brand associations (such as symbols, slogans, or advertisements, etc.) (Aaker, 1991), which do not necessarily happen during the usage phases of the products. Analyzing brand attitude and brand loyalty from this perspective has a special significance for research about IGA because it will help evaluate the effectiveness of the practice on current customers but also on potential customers who have not had any prior experience with the integrated brands. Unfortunately, research investigating the influence of IGA on brand loyalty is also lacking attention. Yang et al.'s (2015) study is one of the few studies that take brand loyalty into account when investigating IGA's efficacy. However, the results show that IGA has no positive effect on brand loyalty.

Upon the review of past research, it appears that there is a lack of investigation on the influence of IGA on brand equity as a whole, whereas the influence of IGA on partial constructs of brand equity such as brand awareness has been investigated (Yang et al., 2006; Herrewijn and Poels, 2018; Chaney et al., 2018). However, as evidence from literature specifies that IGA positively influences player's attitudes towards advertised brands and brand attitudes can influence brand equity in a favorable manner, it is expected that brand attitude will play a mediating role in the relationship between IGA and brand equity. Mediation occurs when the effect of the independent variable on the dependent variable is transmitted via an intermediate variable or mediator. We propose IGA to have a direct effect on brand equity as well as an indirect one via brand attitude as the mediator which will add up to a total effect, represented by the sum of indirect and direct effects.

Hence, the fourth and fifth hypotheses are proposed as follows:

H4:	*Brand attitude has a positive influence on brand equity.*

H5:	Brand attitude has a mediating effect on the relationship between IGA and brand equity.

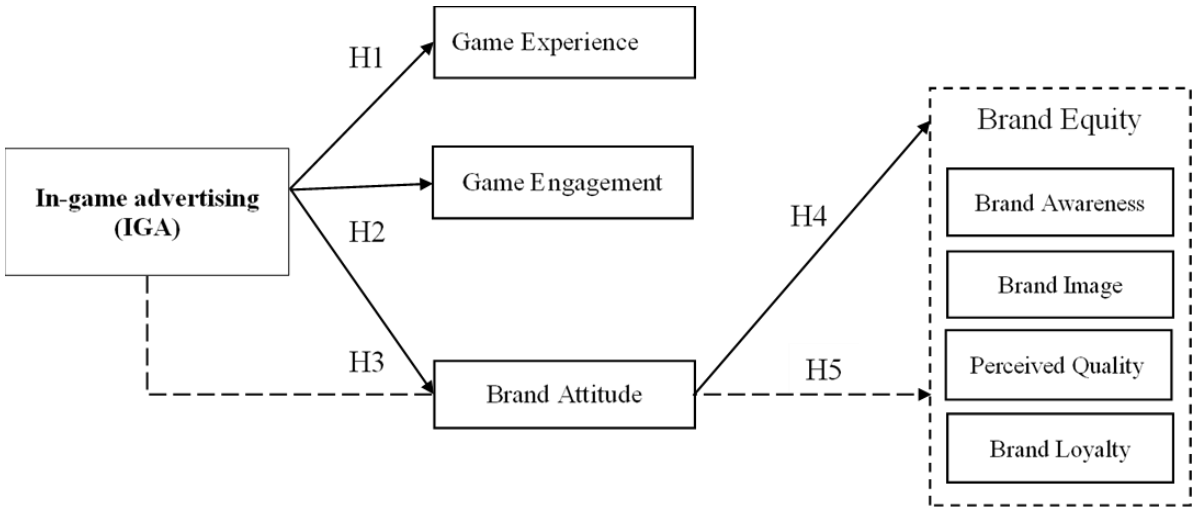


Figure 1: Research model
Source: own illustration

3 Methodology

The current study is exploratory research since it seeks to explore the influences of IGA on player experience, game usage, in-game purchase intention, brand attitude, as well as brand equity, particularly in the mobile game context. Because the main idea is to provide insights from the customer perspective, a quantitative survey approach was employed to collect gamers' opinions. The collaboration between PlayerUnknown's Battlegrounds Mobile (PUBGM) and Mountain Dew (Mtn Dew) was used as the stimulus for the empirical research. Mountain Dew is a global soft drink brand under PepsiCo Inc. (Mountain Dew n. d.). Games have been an integral part of Mountain Dew's marketing strategy since they recognized the need to consume caffeinated drinks to replenish the energy of gamers who are gaming throughout the night (Gamefuel 2022, Hitt 2020). Within the PUBGM-collaboration, the campaign "Do the Dew" was launched with several events both inside and outside the game. By collecting the Mountain Dew cans at virtual Mountain Dew vending machines, players could redeem in-game goodies such as branded t-shirts, branded parachutes, coupons, and an amount of in-game currency (Sengupta, 2020). Before the "Do the Dew" campaign, Mountain Dew used to be the platinum sponsor of the PUBG Mobile Pro League South Asia 06/2020 and later continued sponsoring for PUBG Mobile Global Championship 11/2020 (Ahmed 2020).

3.1 Research design

A questionnaire was developed to collect primary data directly from PUBGM players (see Appendix A). After consenting to the privacy declaration and accepting to participate, the respondents were directed to the demographic part with four questions about their nationalities, genders, age ranges, and current employment status. After completing the question about prior brand knowledge, participants were moved to the next part with information about PUBGM and Mountain Dew's collaboration. The

event was described concisely with text and illustration images. This part is necessary as it is intended to remind gamers who have participated in the event and supplement information for gamers who started playing the game after the event. Subsequently, participants were forwarded to more in-depth questions about their attitudes towards the game and the brand. The promotion of Mountain Dew in the game was done in a subtle and complex way through an in-game event containing branded items, in-game props, and a variety of interactive activities to foster player engagement. For that reason, player's responses towards IGA will be referred to their evaluation towards this in-game event. In order to build an effective survey, the questions were mainly created utilizing pre-existing scales.

3.2 Measurements

In-game advertising (IGA): Player attitude towards IGA was measured using the Personal Involvement Inventory (PII) developed by Zaichkowsky (1994). PII is a tool used to measure “A person’s perceived relevance of the advertisement based on inherent needs, values, and interests” (Zaichkowsky 1994) and is applicable for all types of advertisements. PII covers both affective and cognitive involvement. Affective involvement is a term used to describe an individual's feelings and achievements of particular emotional states. Cognitive involvement addresses the utilitarian motive and can be understood as "the degree of personal relevance of message contents or issue" (Zaichkowsky, 1994). The scale consists of 10 items which can be grouped as follows: interesting, appealing, fascinating, exciting and involving represent the affective involvement according to Zaichkowski (1994), and important, relevant, valuable, means a lot to me and needed might be described as more rational or cognitive in nature. Zaichkowsky (1994) suggests the scale might be divided into two subscales. In order to ensure the compactness and efficiency of this study’s questionnaire, only five out of the ten items from Zaichkowsky's (1994) scale were adopted, representing the affective as well as the cognitive aspect. Participants replied on a semantic differential scale as follows: unexciting/exciting, unappealing/appealing, irrelevant/relevant, unimportant/important, not needed/needed.

Except for the independent variable, all dependent variables were measured using a 5-point Likert scale, ranging from strongly disagree to strongly agree.

Game Experience (GE): Since there were no suitable scales available for measuring this variable, the items were built based on the objective of measuring customers' consensus toward their overall experience. Hedonism is a crucial factor determining player enjoyment. Therefore, one question about IGA's ability to improve the hedonism of the game is also included. Eventually, PUBGM is a highly appreciated and popular game because of the realistic combat experience it brings to players. Thus, the final item was developed to examine whether IGA contributes to the verisimilitude of the game.

Game engagement (EN): This variable was measured by four items, of which three items belong to game usage, and one is for in-game purchase intention. The first item is intended to explore if players are willing to spend more time playing PUBGM during this event. Along with the duration of play, the

frequency of play also reflects the effectiveness of customer retention. Thus, the second item measuring the effect of IGA on the frequency of playing the game was added. The third item examines the impact of IGA on player engagement by seeing how much more effort players make to win event rewards. Finally, appealing branded items can generate revenue for the game publisher. The last question will inspect player's purchase intention towards these items.

Brand attitude (BA): Three items were used to measure player attitude towards the brand Mountain Dew. The first item was adapted from the 7-point bipolar scale of Fishbein and Ajzen (as cited in Muehling and Laczniak, 1988), which is "My attitude toward the brand X is negative/positive." The second item was inspired by Yoo and Donthu (2001), who measure brand attitude on a 5-point bipolar scale with "extremely likable" and "extremely unlikable." The last item was inherited from the scale of Sengupta and Johar (2002), which is "My opinion of X is very favorable."

In order to measure consumer-based brand equity, dimensions from different scales were selected according to the study context and then united. However, there are still certain inconsistencies when applying widely accepted scales to the survey. For instance, it makes no sense to ask someone who has zero prior knowledge about Mountain Dew whether he or she considers himself/herself to be loyal to Mountain Dew. Therefore, some items were removed, modified, and added to the survey.

Brand equity (BE): As mentioned before, this research will measure brand equity as a multidimensional construct that consists of brand awareness, brand image, perceived quality, and brand loyalty.

Brand awareness (AW): Two items developed by Yoo and Donthu (2001) were used to measure this variable, including "I can recognize Mountain Dew among other competing brands" and "I am aware of Mountain Dew," respectively.

Brand image (BI): Since brand image was established from a set of brand associations, Yoo and Donthu's (2001) scale for measuring brand association was employed to measure this variable. Players were asked to what extent do they agree with the three following statements: "Some characteristics of Mountain Dew come to my mind quickly," "I can quickly recall the symbol or logo of Mountain Dew," and "I have difficulty in imagining Mountain Dew in my mind." The last item is reverse scored.

Perceived quality (PQ): Three items were used to measure players' perception of the quality of Mountain Dew soda drink. Two first items were adopted from the scale of Yoo and Donthu (2001) with minor adjustments to fit with the context of the survey. The last item was added to measure the perceived quality of Mountain Dew in comparison with other soft drinks.

Brand loyalty (BL): Brand loyalty was measured using four items. The first item stems from the action loyalty scale of Bobâlcă et al. (2012) which in turn is based on the scale of Zeithaml, Berry and Parasuraman (1996). It asks how likely it is that the customers recommend this brand to their friends. The second item was selected from Yoo and Donthu's (2001) scale to ask participants whether they would consider Mountain Dew as their first choice when looking for a soft drink. The third item was also

adopted from Yoo and Donthu's (2001) scale to examine the priority choice of gamers. Finally, the last item was developed to gain insights into the customer's possibility of choosing Mountain Dew instead of a similar product.

3.3 Data Collection

The survey is limited to PUBGM players only because players who have a good understanding of PUBGM will be able to recall or imagine how the brand is promoted more clearly than those who have never played. Furthermore, the purpose of this study was to explore the impact of IGA on gamers in general, so it is unnecessary to include subjects who shared other specific similarities.

The questionnaire was administrated in two versions, including the Vietnamese version for Vietnamese gamers and the English version for global gamers. The survey was conducted online, using Google Forms and distributed directly in-game as well as via gaming platforms such as PUBGM Facebook groups and Discord communities with a total of 20 public posts across 19 communities. The survey finished with 330 participants, of which 10.3% are international players and the remaining 89.7% are Vietnamese players. Among 330 participants, it is clear that male players still make up the majority with 56.7 %, followed by female players with 39.7%, LGBT 2.7%, and about 0.9% do not want to mention their gender. In terms of age, the majority of players are Gen Z (people born from 1995 - 2010) with approximately 89.4%. Besides, millennials are made up of 10.3%, and 0.3% are Gen Xers (Francis and Hoefel, 2018). Students account for the vast majority of respondents with 69.1% and follow by employees with 21.5%. In addition, the data also shows that the majority of participants are veteran gamers who have been with the game for more than one year (83%). Their gaming frequency is also very intensive, with 76.1% playing on a daily basis. Based on the data, it can be inferred that Mountain Dew is a well-known brand among the participants since 72.7% of people already knew the brand. More details about sample demographics can be found in Table 1.

Table 1: Sample demographics

Sample size = 330	Number	Percentage
Gender		
Male	187	56.7%
Female	131	39.7%
LGBT	9	2.7%
Prefer not to say	3	0.9%
Age		
Under 18	86	26.1%
18 - 25	209	63.3%
26 - 40	34	10.3%

41 - 60	1	0.3%
Above 60	0	0.0%
Status of employment		
Student	228	69.1%
Employee	71	21.5%
Unemployed	16	4.8%
Entrepreneur/Self-employed	14	4.2%
Retired	1	0.3%
Other	0	0.0%
Nationality		
Vietnamese	296	89.7%
Other nationalities	34	10.3%
Know Mountain Dew		
Yes	240	72.7%
No	90	27.3%
Playing PUBGM for		
Less than 1 week	7	2.1%
Less than 1 month	7	2.1%
1 - 6 months	20	6.1%
6 months - 1 year	22	6.7%
More than 1 year	274	83.0%
Frequency of playing PUBGM		
Less than 1 time a month	11	3.3%
1 - 3 times per month	19	5.8%
Once a week	8	2.4%
2 - 5 times per week	41	12.4%
Everyday	251	76.1%

Source: own table

4 Results

All hypotheses in the research model were examined using the Partial Least Squares Structural Equation Modeling (PLS-SEM) technique. The procedure of evaluating PLS-SEM results consists of two main parts, namely, examining the measurement models and assessing the structural models. Examining the measurement model includes examining the indicator loadings, internal consistency reliability, convergent and discriminant validity of each construct (Garson, 2016; Hair et al., 2019). Assessing structural model entails multicollinearity, the coefficient of determination (R^2), and structural path coefficients (Garson, 2016).

In the reflective model, the focus is on outer model loadings instead of outer model weights, and the acceptable loadings range is from 0.708 to 1 (Garson, 2016). The analyzed result showed that all items have sufficient loadings except BI3 (=-0.538) (see Appendix B). A possible reason for that might be the reversed scoring of this single item. BI3 was thus removed from the data set. Next, the reliability of scales was examined by Cronbach's alpha and composite reliability. Because measuring items were inherited and combined from different existing scales or developed based on literature review, these indices will help ensure the reliability of the new scales by eliminating inconsonant items. Cronbach's alpha is a statistic used to measure the internal consistency of all observable items within a construct (Taber, 2018). Composite reliability is an alternative to Cronbach's alpha and is favored by academics in PLS-based research. Generally, the acceptable values of Cronbach's alpha and composite reliability are greater than 0.7 (Nunnally and Bernstein, 1994; Taber, 2018; Garson, 2016). Accordingly, the scales of all variables fulfilled the requirements. The summary of construct measurements is shown in Table 2.

Table 2: Construct measurement summary

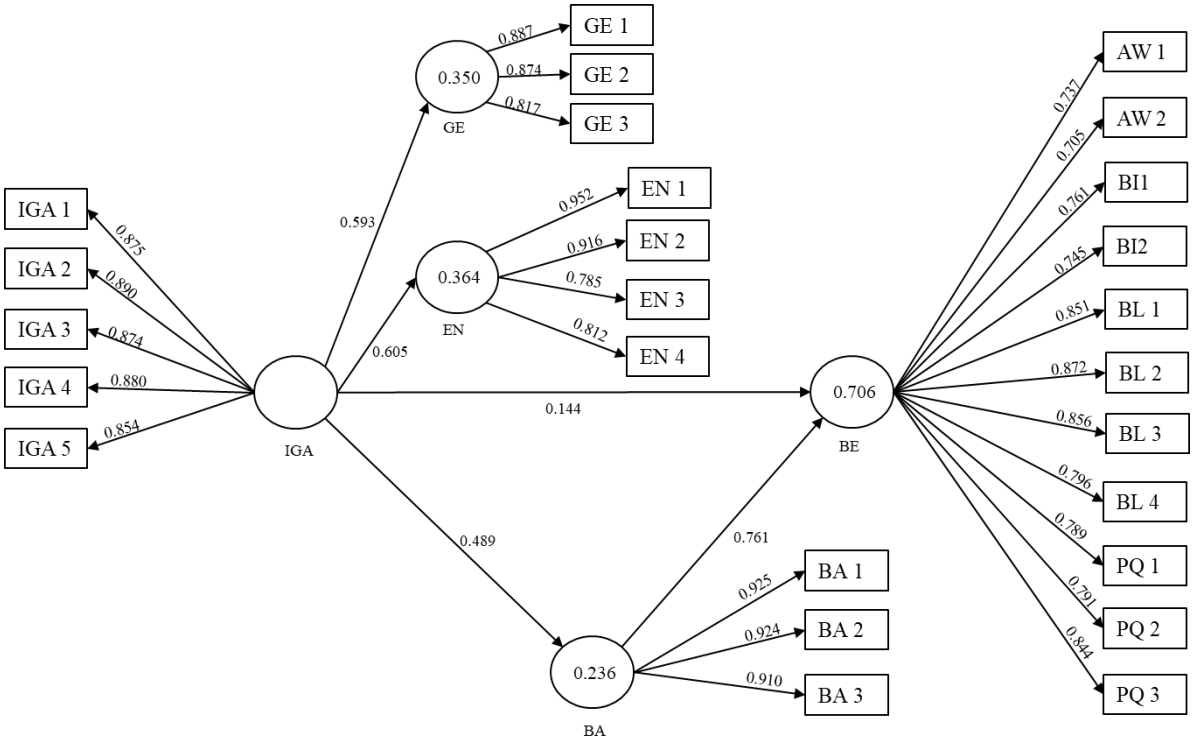
Variable	Item	Loadings	Composite Reliability	Cronbach's alpha	AVE
IGA	IGA1	0.875	0.942	0.923	0.765
	IGA2	0.890			
	IGA3	0.874			
	IGA4	0.880			
	IGA5	0.854			
GE	GE1	0.887	0.895	0.825	0.739
	GE2	0.874			
	GE3	0.817			
EN	EN1	0.925	0.920	0.883	0.743
	EN2	0.916			
	EN3	0.785			
	EN4	0.812			
BA	BA1	0.925	0.943	0.909	0.846
	BA2	0.924			
	BA3	0.910			
BE	AW1	0.737	0.950	0.942	0.635
	AW2	0.705			
	BI1	0.761			
	BI2	0.745			
	BL1	0.851			

BL2	0.872
BL3	0.856
BL4	0.796
PQ1	0.789
PQ2	0.791
PQ3	0.844

Source: own table

In addition to the construct reliability, the result of the PLS algorithm also allowed for checking the construct validity with average variance extracted (AVE) and discriminant validity. All constructs in the research model have AVE values that exceeded the requirement of 0.5, implying that factors can explain more than half the variance of their respective indicators (Garson, 2016). Discriminant validity in SmartPLS was assessed using three indicators: the Fornell-Larcker criterion, cross-loading, and Heterotrait-Monotrait (HTMT) ratio (see Appendix B). Although satisfying most of the requirements for discriminant validity, the HTMT ratio of GE and EN (=0.92) is higher than the cutoff of 0.90 (Gold et al., 2001; Henseler et al., 2015). However, the requirement of an HTMT ratio for a well-fit model is below 1.0 (Garson, 2016); thus, none of the constructs was changed.

After ensuring the measurement model fulfilled expectations, it was proceeded with assessing the structural model. In the reflective model, variance inflation factors (VIF) are presented by the "Inner VIF Values" and should not be higher than 4.0 (Garson, 2016). Therefore, it can be concluded that there is no collinearity in the current model because the VIF only reached values between 1.000 and 1.341 (see Appendix).



Inner model: Path coefficients; Outer model: Outer loadings; Constructs: R square adjusted

Figure 2: Structural equation model
Source: own illustration

The coefficient of determination (R^2) is a measure of the fit of the linear model. As shown in Figure 2, IGA can explain 35%, 36.4%, and 23.6% of GE, EN, and BA variance, respectively. Similarly, 70.6% of the variance in BE is explained by IGA and BA. The explanatory powers of independent variables are considered substantial, moderate, and weak if R^2 values are 0.75, 0.50, and 0.25 respectively (Hair et al., 2019).

Table 3: Summary of path coefficients and hypotheses evaluation

Hypotheses	Original Sample (O)	P Values	Result
H1: IGA -> GE	0.593	0.000	Preliminary not rejected
H2: IGA -> EN	0.605	0.000	Preliminary not rejected
H3: IGA -> BA	0.489	0.000	Preliminary not rejected
H4: BA_ -> BE	0.761	0.000	Preliminary not rejected
H5: IGA -> BA -> BE	0.372	0.000	Preliminary not rejected

Source: own table

Before examining the structural path coefficients, bootstrapping technique was executed with 1,000 subsamples. Results in Table 3 demonstrate the direct effects of independent variables on endogenous variables. Accordingly, IGA exerted the most potent effect on EN (=0.605), followed by GE (=0.593) and

BA (=0.489). Similarly, BA exerted a significant influence on BE (=0.761). With significance levels of 0.000 (smaller than the threshold of 0.05) (Garson, 2016), none of the hypotheses H1, H2, H3, and H4 were preliminarily rejected. It is noticeable that IGA can have a slight direct effect on BE (=0.144). The analysis also calculated the indirect effect of IGA on BE through BA by multiplying the path coefficient of IGA -> BA (=0.489) with the path coefficient of BA -> BE (=0.761). As a result, the indirect effect of IGA -> BA -> BE has a value of 0.372 and is statistically significant with a p-value of 0.000. The direct and indirect effects of IGA on BE together made up a considerable total effect of IGA on BE (=0.516). Explicitly, most of the IGA's influence on BE is achieved through BA. Thus, the hypothesis about the mediating role of BA in H5 is also supported.

Further in-depth analysis of the impact of IGA and BA on each brand equity's dimension was also carried out with a similar process of accessing measurement model and structural model. All loadings vary from 0.785 to 0.954, fulfilled the requirement of minimum loadings of 0.708. The reliability and validity of each dimension also satisfied the approval criteria. Furthermore, no multicollinearity was detected in this analysis, with all VIF values smaller than 4.0. (see Appendix C). In regard to the influence of IGA on each dimension, the result indicated that IGA does not have any direct effect on PQ (=0.062), AW (=-0.048), and BI (=0.055) with p-values greater than 5%. However, IGA was demonstrated to have a moderate direct influence on BL (=0.281; p-value = 0.000). In contrast, the influence of BA on all dimensions of BE is explicitly confirmed with appropriate significance levels of all path coefficients. More specifically, BA exerted a substantial influence on PQ (=0.757). The influence of BA on other dimensions is slightly weaker but still can be considered significant (AW=0.699; BI=0.645; BL=0.599). Besides testing for direct effects, bootstrapping results also examined the indirect effects of IGA on four dimensions of brand equity. In general, all influences are statistically relevant with significant values of 0.000. Therefore, although there is no direct effect, the total effect of IGA on brand equity's dimensions is considerable, especially on BL (=0.573).

Table 4: Summary of control factors' influences

Variable	IGA	GE	EN	BA	PQ	AW	BI	BL	BE
Nationality		✓	✓	✓	✓	✓			✓
Brand knowledge						✓	✓		✓
Gender								✓	
Age									
Employment Stt	✓								
Playing period									
Playing frequency	✓		✓		✓				

Source: own table

In addition to examining the impact of IGA on gamers' evaluation towards PUBGM and Mountain Dew, the influence of control factors on the outcomes was also tested by the independent sample t-test and one-way ANOVA (ANOVA).

In sum, there is no discrepancy in people's evaluations towards the game and advertised brand between different age groups and between individuals who have started playing the game for a long or short period of time. On the other side of the spectrum, the opinions of players from Vietnam and players from other countries are different in the majority of aspects, except in IGA and BL. In all cases, Vietnamese players tended to show a more positive attitude than players from other nationalities. Especially, while Vietnamese players seemed to agree that IGA helps improve their gaming experience (Mean=3.730), the other players slightly disagreed (Mean=2.941).

It is also worth noting that prior knowledge of the advertised brand leads to more favorable attitudes towards BE, particularly in AW, BI. Additionally, the more frequently people play PUBGM, the higher level of involvement with IGA they held. Among five levels of playing frequency, people playing the game on a daily basis tended to engage with the game more than people who play the game occasionally. Their perception of the quality of the integrated product is also more favorable. Besides, gender differences also lead to differences in evaluations towards BL. In particular, male gamers show a slightly higher loyalty to the advertised brand than female gamers. Finally, a difference in the mean of IGA between students and self-employed people was also reported. Entrepreneur and self-employed people expressed a higher level of involvement with IGA than students did.

5 Discussion

The results of this study demonstrate that IGA has a positive influence on player experience, player engagement, brand attitude, and brand equity. In addition, statistical evidence from the analysis also supports that brand attitude plays a crucial mediating role in the influence of IGA on brand equity. This study successfully provided answers to the research questions raised at the beginning. In a nutshell, IGA positively affects games and promoted brands, thus bringing mutual advantages to game publishers, brands, as well as players.

5.1 Advantages for game publishers

For game publishers, positive responses to advertising are seen as a very beneficial token. An exemplary implementation of a few "pioneer" ads will be a preliminary to persuade potential clients to invest in more IGA campaigns even with a grander scale. Consequently, game companies can expect a growing revenue stream from IGA to help them subsidize marketing costs, reinvest in game development to improve user experience, expand the user base, increase retention, and drive more in-game purchases (Herrewijn and Poel, 2014).

Although proven to be effective, it should be noted that the outcomes of the execution depend on several other factors. Importantly, while the evidence that incorporating real-life brands allows for greater immersion into a more realistic game world is undeniable, realism is not appreciated in fantasy games (Poels et al., 2013). Thus, optimizing IGA for fantasy games is a challenging task that needs further consideration by academics and practitioners to ensure that the inconsistency between game environment and ads which tends to ruin player experience cannot occur. In sum, it is vital for game developers to design and implement ads carefully, meticulously, and creatively. Additionally, keeping track of the gamer's feedback towards executed IGA is also an important task that can help generate many valuable insights for future improvements.

5.2 Advantages for Brands

For brands, IGA can be seen as a new approach with many exceptional advantages. The vivid and interactive nature of IGA allows customers not only to see but also to interact with the brand or product in their gameplays, thereby provoking their affection for the brand as well as help them remember it easily (Herrewijn and Poel, 2014). The placement of the product and brand in games influences customer's assessment of its quality. Therefore, brands should find ways to present the product's features tactfully and let customers experience it through interaction. Doing this can further strengthen customer trust and perception of the brand. Mau et al. (2010) also found that game outcomes will influence player evaluations towards the integrated brand. Therefore, to minimize the detrimental impacts of bad gaming outcomes, branded items could be used as an enabler to help players overcome challenges and win the game more easily.

Attesting to the positive influence of IGA on brand attitude reinforced the findings of previous studies. Players' attitudes towards the promoted brand were relatively consistent across different subject groups except nationality. As this study used a single brand as a research stimulus, some effects such as product/brand differences, congruity between product/brand and the game were omitted. However, integrating a brand into a gaming environment requires these considerations to achieve the optimal level of affection which can, in turn, prompt beneficial consumer behavior or enhance brand equity (Nelson et al., 2004). Reijmersdal et al. (2010) and Herrewijn and Poel (2018) discovered that brands that were integrated in an interactive way attained a higher favorite level compared to brands that were integrated passively. It was also proven that player's attitudes towards embedded brands would be positive in positive game contexts and vice versa (Yoo and Eastin, 2017). Although determining the congruity between a title and a brand is not an easy task, it is critical since many studies confirmed that game-product congruity positively affects people's attitudes towards the brand. Reversely, the perceived incongruity between game and brand will lead to negative responses (Lee and Faber, 2007; Peters and Leshner, 2013). Finally, Mau et al. (2008) presented a surprising finding that IGA did not benefit familiar brands. In their research, players showed a favorable inclination towards unfamiliar brands, but their opinions towards familiar brands deteriorate. Another research by Yang et al.

(2015) also highlighted a similar finding that the lower the level of brand familiarity, the greater the effect of IGA; on the other hand, the higher the level of brand familiarity, the smaller the influence of IGA.

5.3 Advantages for players

The reasons people play games are to escape reality, relieve boredom, reduce pressure, and generally to have fun (Youn and Lee, 2003). When an individual is immersed in a digital world with a high feeling of presence, they will experience a more significant impact of the events in that world, including the influence of any persuasive message (Herrewijn and Poel, 2014). In this study, IGA was displayed to have a positive effect on player experience by enhancing hedonism and adding a touch of reality to the game environment. IGA is also a kind of non-disruptive advertising as it goes with the flow of the gameplays, so game developers can leverage IGA as a tactic for bringing players a refreshing experience.

Evidence from the analysis also proved that IGA helps improve the appealingness of games by positively influencing the players' commitments to the title they play. According to Lucas and Sherry (2004), the top-rated motivation for playing a game is challenge. By creating novel challenges and rewarding with in-game goodies, the ads implemented in the form of short-term events successfully triggered players' ambition to receive rewards by accomplishing all event-related tasks. It also, in turn, galvanized players to spend more time as well as to play the game with higher frequency. Although a previous study indicated that virtual rewards and perceived playfulness are the drivers of in-game purchase intention (Cheung et al., 2021), the result of this study showed that the majority of players were not willing to pay for a branded item. Purchase intention, however, is a complicated behavior that needs both ability and motivation (Balakrishnan and Griffiths, 2018). Purchase of virtual items in-game is predicted by aesthetic design, sense of authenticity (Wu and Hsu, 2018), competitive price, and game loyalty (Cheung et al., 2021). Therefore, a possible explanation for this could be that a player's purchasing decision is more determined by other factors rather than the influence of IGA.

In the current study, players expressed a relatively high involvement with IGA. It suggested that they found the practice is interesting, appealing, relevant, important, and needed. It can be inferred that the attitude of players towards the advertisements is positive since the involvement was assessed under both affective and cognitive angles. The result also revealed that the more frequently people play the game, the more favorable their attitude towards IGA will be. These findings are in line with previous studies (Nelson, 2002; Poels et al., 2013) in proving that IGA could be a promising alternative to traditional mass media advertising.

6 Conclusions and outlook

As one of the few studies that investigated the impact of IGA on brand equity, this study demonstrated that IGA could exert a moderate influence on brand equity as well as its dimensions. However, it should be noted that the direct effect of IGA on brand equity is very fair. IGA's influence on brand equity is mainly achieved through brand attitude. The more the players are involved with IGA, the more favorable their attitude towards the brand will be, and thus a company's brand equity can be improved. Likewise, IGA not only helps the brand strengthen its brand awareness and makes the brand image stay in the customer's mind but also helps potential customers appreciate product quality. Despite the fact that brand loyalty is a challenging aspect to assess when prior usage experience is not guaranteed, it was also positively influenced by IGA. It is worth mentioning that prioritizing the purchase of the advertised product does not receive as much agreement as recommending that product to others. The reason for this result may be that people tend to say positive words about as well as recommend their favorite brands to others (Bozbay et al., 2018) while purchase decision requires more complex considerations (Balakrishnan and Griffiths, 2018).

This study contributes to the holistic picture of advertising in digital games by filling a present knowledge gap in the field of strategy, making it relevant to both academia and businesses. However, it must be noted that apart from increasing brand awareness and changing brand perceptions, the ultimate goal of marketing communication is driving key behavioral outcomes (Kotler and Keller, 2015). As the impact of IGA on customer behavior has not been thoroughly investigated in this study, future studies are expected to extend knowledge in this direction.

Additionally, further investigation on other game genres besides shooting games would be very valuable. Added to that, the difference between free-to-play (F2P) and pay-to-play (P2P) games should be regarded in future studies, for players who had to pay for the game in the first place might be less accepting when it comes to IGA.

Also, the selection of the stimulus product and ad categories can be expanded. This study not just used a single category (beverages), but also a single product within this category as the stimulus for the survey. This way, the effects of product or brand differences as well as existing brand preferences were omitted. Moreover, the congruity between product or brand and the game has been emphasized in many studies. For that reason, comparisons between different products or brands in the same game context are needed in future studies to find out which ones are suitable for IGA. In addition, as mentioned earlier, the implementation of advertising in the game environment is exceptionally dynamic and flexible in terms of advertising forms. In addition to brand placements, the effectiveness of other categories such as sponsorship deals, real-world analogs, branded music and sounds, branded characters, and brand-related cheat codes are also worth investigating.

Although video games are traditionally seen as a hobby for the young and for males, there are suggestions that gamers are a much more diverse group nowadays. Further investigations should consider this fact, widening the focus from this traditional view and include other genders and age groups.

As gaming is a worldwide phenomenon, similar studies are encouraged to be carried out in other markets to better present the global picture of IGA in mobile games. In addition, the differences in assessment between different cultures presented in this study need to be considered more thoroughly by further cross-cultural research to draw a firmer conclusion about the influence of these factors.

Research about IGA often derives from the consumer perspective. Understanding consumer behavior and attitudes are vital in providing significant implications for the academic and business domain. However, the current body of literature largely lacks research that considers the perspective of game publishers and brands towards the feasibility of this strategy. Sharings about the barriers that parties may face when implementing IGA, aspects that need to be considered to create effective campaigns or comparing the effectiveness of IGA with other marketing communication strategies would help complete the holistic picture of IGA.

References

Aaker, D.A. (1996). Measuring brand equity across products and markets. *California Management Review,* Vol. 38, Spring, pp. 102-120.

Aaker, D.A., (1991). *Managing brand equity: capitalizing on the value of a brand name*. Free Press; Maxwell Macmillan Canada; Maxwell Macmillan International, New York: Toronto: New York. Pp. 18 – 106.

Ahmed, W. (2020, Sep 22). *Here are the locations of Mountain Dew vending machines in PUBG Mobile.* Retrieved from https://dotesports.com/news/here-are-the-locations-of-mountain-dew-vending-machines-in-pubg-mobile. Accessed on 26.07.2022.

Balakrishnan, J. & Griffiths, M.D. (2018). Loyalty towards online games, gaming addiction, and purchase intention towards online mobile in-game features. *Computers in Human Behavior*, 87, 238-246. https://doi.org/10.1016/j.chb.2018.06.002.

Bobâlcă, C., Gătej(Bradu), C., & Ciobanu, O. (2012). Developing a Scale to Measure Customer Loyalty. *Procedia Economics and Finance,* 3, 623–628. https://doi.org/10.1016/S2212-5671(12)00205-5.

Boyle, E.A., Connolly, T., Hainey, T., & Boyle, J.M. (2012). Engagement in digital entertainment games: A systematic review. *Computers in Human Behavior*, 28, 771-780. https://doi.org/10.1016/j.chb.2011.11.020.

Bozbay, Z. & Karami, A. & Arghashi, V. (2018). *The Relationship between Brand Love and Brand Attitude*. 2nd International Conference on Management and Business, Tebriz, Iran, 8-9.

Calvillo-Gámez, E.H., Cairns, P., & Cox, A.L. (2010). Assessing the Core Elements of the Gaming Experience. In Bernhaupt, R. (Ed.), *Evaluating User Experience in Games*. Human-Computer Interaction Series. Springer, London. https://doi.org/10.1007/978-1-84882-963-3_4.

Chaney, I., Hosany, S., Wu, M. S., Chen, C. S., & Nguyen, B. (2018). Size does matter: Effects of in-game advertising stimuli on brand recall and brand recognition. *Computers in Human Behavior*, 86, 311-318. https://doi.org/10.1016/j.chb.2018.05.007.

Chaney, I., Lin, K. & Chaney, J. (2004). The Effect of Billboards within the Gaming Environment. *Journal of Interactive Advertising*, 5(1), 37-45. https://doi.org/10.1080/15252019.2004.10722092.

Che, X. & Ip, B. (2017). Mobile Games in China: Development and Current Status. In Jin, D. (Ed.), *Mobile Gaming in Asia.* Mobile Communication in Asia: Local Insights, Global Implications. Springer, Dordrecht. https://doi.org/10.1007/978-94-024-0826-3_9.

Cheung, M., Leung, W., Chang, L., & Shi, S. (2021). Driving loyalty intentions of mobile games: a motivation theory perspective. *Quality & Quantity*. https://doi.org/10.1007/s11135-021-01120-y.

Choi, D., & Kim, J. (2004). Why people continue to play online games: In search of critical design factors to increase customer loyalty to online contents. *Cyberpsychology & Behavior*, *7*, 11–24. https://doi.org/10.1089/109493104322820066.

Coulter, K.S. (1998). The effects of affective responses to media context on advertising evaluations. *Journal of Advertising*, 27(4), 41–51. https://doi.org/10.1080/00913367.1998.10673568.

Eastin, M.S. and Lee, J.A. (2020). Attitudes Toward Advertisements and Brands. In Bulck, J. (Ed.), *The International Encyclopedia of Media Psychology.* https://doi.org/10.1002/9781119011071.iemp0187

Emery L. (2021, Apr 20). *What is an IDFA (and How Will Apple's iOS 14 Update Impact Advertisers)*? Retrieved from https://tinuiti.com/blog/data-privacy/apple-ios-idfa-guide/. Accessed on 07.05.2021.

Escalas, J. E. 2004. Imagine Yourself in the Product: Mental Simulation, narrative Transportation, and Persuasion. *Journal of Advertising*, 33 (2): 37–48. https://doi.org/10.1080/00913367.2004.10639163.

Faircloth, J., Capella, L., & Alford, B. (2001). The Effect of Brand Attitude and Brand Image on Brand Equity. *Journal of Marketing Theory and Practice, 9* (3), 61-75.

Farquhar, P.H. (1989). Managing Brand Equity. *Marketing Research,* 1, 24-33.

Francis, T. & Hoefel, F. (2018, Nov 18). *'True Gen': Generation Z and its implications for companies*. Retrieved from https://www.mckinsey.com/industries/consumer-packaged-goods/our-insights/true-gen-generation-z-and-its-implications-for-companies. Accessed on 20.08.2021.

Gamefuel (2022). Retrieved from https://gamefuel.com/. Accessed on 26.07.2022.

GamesIndustry International (2008, Jun 17). *Landmark IGA-Nielsen Study*. Retrieved from https://www.gamesindustry.biz/articles/landmark-iga-nielsen-study. Accessed on 05.07.2021.

Garson, G. D. (2016). *Partial Least Squares: Regression and Structural Equation Models*. Asheboro, NC: Statistical Associates Publishers.

Gold, A. H., Malhotra, A., & Segars, A. H. (2001). Knowledge management: An organizational capabilities perspective. *Journal of Management Information Systems* 18(1), 185–214. https://doi.org/10.1080/07421222.2001.11045669.

Hair, J.F., Risher, J.J., Sarstedt, M. & Ringle, C.M. (2019). When to use and how to report the results of PLS-SEM", *European Business Review*, 31(1), 2-24. https://doi.org/10.1108/EBR-11-2018-0203.

Hanaysha, J., Abdullah, H.H., & Ghani, N.H. (2013). Assessing the literature on brand equity: From past, present to future. *Australian Journal of Basic and Applied Sciences,* 7(14), 488-499.

Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the Academy of Marketing Science* 43(1), 115-135. https://doi.org/10.1007/s11747-014-0403-8.

Herrewijn, L. & Poels, K. (2013). Putting brands into play. *International Journal of Advertising: The Review of Marketing Communications*, 32(1), 17-44. https://doi.org/10.2501/IJA-32-1-017-044.

Herrewijn, L. & Poels, K. (2014). Rated A for Advertising: A Critical Reflection on In-Game Advertising. In Angelides, M.C. and Agius, H. (Eds.). *Handbook of Digital Games*. https://doi.org/10.1002/9781118796443.ch11.

Herrewijn, L. & Poels, K. (2017). Exploring player responses toward in-game advertising : the impact of interactivity. In Rodgers, S. & Thorson, E. (Eds.). *Digital Advertising.* https://doi.org/10.4324/9781315623252-18.

Herrewijn, L. & Poels, K. (2018). The Effectiveness of In-Game Advertising: Examining the Influence of Ad Format. In Cauberghe, V., Hudders, L. & Eisend M. (Eds.). *Advances in Advertising Research IX.* European Advertising Academy. Springer Gabler, Wiesbaden. https://doi.org/10.1007/978-3-658-22681-7_7.

Hitt, C. (2020, Aug 13). *The Highly Caffeinated & Super-Interesting History of Mountain Dew.* Retrieved from https://www.thrillist.com/news/nation/history-of-mountain-dew-origin-facts. Accessed on 26.07.2022.

Johnstone, E. & Dodd, C. A. (2000). Placements as mediators of brand salience within a UK cinema audience. *Journal of Marketing Communications*, 6(3), 141-158. https://doi.org/10.1080/13527260050118649.

Keller, K. L. (1993). Conceptualizing, Measuring, and Managing Customer-Based Brand Equity. *Journal of Marketing,* 57(1), 1-22. https://doi.org/10.2307/1252054.

Keller, K. L. (2013). *Strategic Brand Management: Building, Measuring, and Managing Brand Equity* (4th ed.). Pearson.

Kim, H., Kim, W. & An, J. (2003). The effect of consumer-based brand equity on firms' financial performance. *Journal of Consumer Marketing*, 20, 335–351. https://doi.org/10.1108/07363760310483694.

Kim, S., Lee, J., Hwang, Y. & Jeong, S. (2016). Effects of prominent in-game advertising in mobile media: cognitive, affective, and behavioural outcomes and the moderating role of persuasion knowledge. *International Journal of Mobile Communications,* 14(3), 203-225.

Kotler, P. & Keller, K. L. (2015). *Marketing Management* (15th Ed.). Pearson.

Krystallis, A. & Chrysochou, P. (2014). The effects of service brand dimensions on brand loyalty. *Journal of Retailing and Consumer Services*, 21(2), 139-147. https://doi.org/10.1016/j.jretconser.2013.07.009.

Lang, A. (2009). The Limited Capacity Model of Motivated Mediated Message Processing. In Nabi, R. L. & Olive, M. B. (Eds.). *The SAGE Handbook of Media Processes and Effects,* 193-204. Thousand Oaks, CA: Sage Publications.

Lee, A. Y., & Sternthal, B. (1999). The effects of positive mood on memory. *Journal of Consumer Research*, 26(2), 115–127. https://doi.org/10.1086/209554.

Lee, E., Lee, S., & Yang, C. (2017). The influences of advertisement attitude and brand attitude on purchase intention of smartphone advertising. *Industrial Management & Data Systems*, 117(6). http://dx.doi.org/10.1108/IMDS-06-2016-0229.

Lee, M., & Faber, R. J. (2007). Effects of Product Placement in On-line Games on Brand Memory. *Journal of Advertising*, 36(4), 75-90. https://doi.org/10.2753/JOA0091-3367360406.

Liu, F., Li, J., Mizerski, D. and Soh, H. (2012). Self-congruity, brand attitude, and brand loyalty: a study on luxury brands. *European Journal of Marketing*, 46(7/8), 922-937. https://doi.org/10.1108/03090561211230098.

Lucas, K., & Sherry, J. L. (2004). Sex Differences in Video Game Play: A Communication-Based Explanation. *Communication Research*, 31(5), 499–523. https://doi.org/10.1177/0093650204267930.

Mackay, T., Ewing, M., Newton, F., & Windisch, L. (2009). The effect of product placement in computer games on brand attitude and recall. *International Journal of Advertising,* 28(3), 423-438. https://doi.org/10.2501/S0265048709200680.

Mau G., Silberer G., & Gödecke J. (2010). Game Outcome and In-Game Advertising Effects. In Terlutter, R., Diehl, S., Okazaki, S. (Eds.). *Advances in Advertising Research (Vol. 1)*. Gabler. https://doi.org/10.1007/978-3-8349-6006-1_11.

Mau, G., Silberer, G., & Constien, C. (2008). Communicating brands playfully. *International Journal of Advertising*, 27(5), 827-851. https://doi.org/10.2501/S0265048708080293.

Molesworth, M. (2006), Real brands in imaginary worlds: investigating players' experiences of brand placement in digital games. *Journal of Consumer Behaviour*, 5, 355-366. https://doi.org/10.1002/cb.186.

Moulard, J. G., Kroff, M., Pounders, K. & Ditt C. (2019). The Role of Suspense in Gaming: Inducing Consumers' Game Enjoyment. *Journal of Interactive Advertising*, 19(3), 219-235. https://doi.org/10.1080/15252019.2019.1689208.

Mountain Dew (n.d.). Home page. Retrieved from https://www.mountaindew.com. Accessed on 26.07.2022.

Muehling, D. D. & Laczniak, R. N. (1988). Advertising's Immediate and Delayed Influence on Brand Attitudes: Considerations Across Message-Involvement Levels. *Journal of Advertising*, 17(4), 23-34. https://doi.org/10.1080/00913367.1988.10673126.

Nelson, M. R. (2002). Recall of brand placements in computer/video games. *Journal of Advertising Research,* 42(2), 80-92. https://doi.org/10.2501/JAR-42-2-80-92.

Nelson, M.R., Keum, H., & Yaros, R. A. (2004). Advertainment or Adcreep Game Players' Attitudes toward Advertising and Product Placements in Computer Games. *Journal of Interactive Advertising*, 5(1), 3-21. https://doi.org/10.1080/15252019.2004.10722090.

Newzoo (2021, Jul 21). *Newzoo Global Games Market Report 2021 | Free Version*. Retrieved from https://newzoo.com/insights/trend-reports/newzoo-global-games-market-report-2021-free-version/. Accessed on 20.07.2021.

Nguyen, T., Dadzie, C. & Davari, A. (2013). *Does Brand Equity Mean Brand Equity? An Empirical Study of Consumer Based Brand Equity and Financial Based Brand Equity.* AMA Summer Educators' Conference, Bosten, MA.

Nunnally, J. and Bernstein, I. (1994). *Psychometric Theory (3rd edition)*. New York: McGraw-Hill.

Oliver, R.L., (1997). *Satisfaction: A Behavioral Perspective on the Consumer*. Routledge. https://doi.org/10.4324/9781315700892.

Owolabi, A. B. (2009). Effect of Consumers Mood on Advertising Effectiveness. *Europe's Journal of Psychology,* 5(4), 118-127. https://doi.org/10.5964/ejop.v5i4.243.

Paddon, R. (2019, Mar 19). *Pros and Cons of in-app advertisement for money making*. Retrieved from http://www.adotas.com/2019/03/pros-cons-app-advertisement-money-making/, Accessed on 01.03.2021.

Pelsmacker, P.D., Dens, N., & Verberckmoes, S. (2019). How Ad Congruity and Interactivity Affect Fantasy Game Players' Attitude towards In-Game Advertising. *Journal of Electronic Commerce Research*, 20, 55.

Peters, S. & Leshner, G. (2013). Get in the Game: The Effects of Game-Product Congruity and Product Placement Proximity on Game Players' Processing of Brands Embedded in Advergames. *Journal of Advertising*, 42(2-3), 113-130. https://doi.org/10.1080/00913367.2013.774584.

Poels, K., Janssens, W., & Herrewijn, L. (2013). Play Buddies or Space Invaders? Players' Attitudes Toward In-Game Advertising. *Journal of Advertising*, 42(2-3), 204-218. https://doi.org/10.1080/00913367.2013.774600.

Reijmersdal, E., Jansz, J., Peters, O., & Noort, G. (2010). The effects of interactive brand placements in online games on children's cognitive, affective, and conative brand responses. *Computers in Human Behavior*, 26(6), 1787-1794. https://doi.org/10.1016/j.chb.2010.07.006.

Reijmersdal, E.A., Neijens, P.C. & Smit, E.G. (2007). Effects of television brand placement on brand image. *Psychology & Marketing*, 24, 403-420. https://doi.org/10.1002/mar.20166.

Roy, A. T. (2022, Jan 03). *Contextual: What's All the Fuss About.* Retrieved from https://verve.com/blog/contextual-whats-all-the-fuss-about/. Accessed on 26.07.2022.

Schöber, T./Stadtmann, G. (2020). Fortnite: The Business Model Pattern Behind the Scene. *Die Unternehmung,* 74(4), 426-444. https://doi.org/10.5771/0042-059X-2020-4.

Scolastici, C. & Nolte, D. (2013). *Mobile game design essentials*. Packt Publishing, 283 – 285.

Sengupta, J., & Johar, G. V. (2002). Effects of inconsistent attribute information on the predictive value of product attitudes: Toward a resolution of opposing perspectives. *Journal of Consumer Research*, *29*(1), 39–56. http://dx.doi.org/10.1086/339920.

Sengupta, S. (2020, Sep 24). *Mountain Dew Announces Expanded Partnership With PUBG Mobile.* https://archive.esportsobserver.com/mountain-dew-pubg-mobile-sept2020/. Accessed on 04.04.2021.

Seo, Y.N., Kim, M., Lee, D., & Jung, Y. (2018). Attention to eSports advertisement : effects of ad animation and in-game dynamics on viewers' visual attention. *Behaviour and Information Technology*, 37(12), 1194-1202. https://doi.org/10.1080/0144929X.2018.1488993.

Shibuya, A., Teramoto, M. & Shoun, A. (2017). Toward Individualistic Cooperative Play: A Systematic Analysis of Mobile Social Games in Japan. In Jin, D. Y. (Ed.). *Mobile Gaming in Asia*. *Local Insights, Global Implications.* Springer, Dordrecht. https://doi.org/10.1007/978-94-024-0826-3_14.

Smith, J. (2020, Oct 20). *Why in-game advertising now represents a powerful performance as well as a branding channel*. Retrieved from https://www.thedrum.com/profile/the-digital-voice/news/why-in-game-advertising-now-represents-a-powerful-performance-as-well-as-a-branding-channel. Accessed on 01.03.2021.

Smith, M., Sutherland, J., Mackie, B., & Sun, S. (2014). In-Game Advertising influencing factors: a Systematic Literature Review and meta-analysis. *The Computer Games Journal,* 3(2), 102-131.

Sondhi, S. (2021, Dec 05). *The Games People Play… Create Opportunities.* Retrieved from https://verve.com/blog/the-games-people-playcreate-opportunities/. Accessed on 26.07.2022.

Spears, N. & Singh, S. (2004). Measuring Attitude Toward the Brand and Purchase Intentions. *Journal of Current Issues and Research in Advertising*. 26, 53-66. https://doi.org/10.1080/10641734.2004.10505164.

Su, Y., Chiang, W., Lee, C. J., & Chang, H. (2016). The effect of flow experience on player loyalty in mobile game application. *Computers in Human Behavior*, 63, 240-248. https://doi.org/10.1016/j.chb.2016.05.049.

Taber, K. S. (2018). The Use of Cronbach's Alpha When Developing and Reporting Research Instruments in Science Education. *Res Sci Educ* 48**,** 1273–1296. https://doi.org/10.1007/s11165-016-9602-2.

Terlutter, R. & Capella, M. L. (2013). The Gamification of Advertising: Analysis and Research Directions of In-Game Advertising, Advergames, and Advertising in Social Network Games. *Journal of Advertising*, 42(2-3), 95-112. https://doi.org/10.1080/00913367.2013.774610.

Thomas, W. & Stammermann, L. (2007). *In-Game Advertising – Werbung in Computerspielen*, Gabler.

Wijman, T. (2021, Feb 4). *Newzoo's Trends to Watch in 2021 (Games, Esports and Mobile)*. Retrieved from https://newzoo.com/insights/articles/newzoos-trends-to-watch-in-2021games-esports-and-mobile/. Accessed on 07.05.2021.

Wu, S.-L., & Hsu, C.-P. (2018). Role of authenticity in massively multiplayer online role playing games (MMORPs): Determinants of virtual item purchase intention. *Journal of Business Research*, 92, 242–249. https://doi.org/10.1016/j.jbusres.2018.07.035.

Yang J., Zhang M., & Zou. Z. (2015). The effect of In-game Advertising in SNS on Brand Equity. *Journal of Service Science and Management*, 8(1). http://dx.doi.org/10.4236/jssm.2015.81013.

Yang, M., Ewoldsen, D., Dinu, L., & Arpan, L. (2006). The Effectiveness of "in-Game" Advertising: Comparing College Students' Explicit and Implicit Memory for Brand Names. *Journal of Advertising*. 35, 143-152. https://doi.org/10.2753/JOA0091-3367350410.

Yerukhimovich, A. (2020, Aug 17). *In-app Ads and In-game Ads: What's the Difference?*. Retrieved from https://www.businessofapps.com/insights/in-app-ads-vs-in-game-ads/. Accessed on 01.03.2021.

Yoo, B. & Donthu, N. (2001). Developing and Validating a Multidimensional Consumer-Based Brand Equity Scale. *Journal of Business Research*. 52, 1–14. https://doi.org/10.1016/S0148-2963(99)00098-3.

Yoo, B., Donthu, N. & Lee, S. (2000). An Examination of Selected Marketing Mix Elements and Brand Equity. *Journal of the Academy of Marketing Science*. 28, 195–211. https://doi.org/10.1177/0092070300282002.

Yoo, S. & Eastin, M. (2017). Contextual advertising in games: Impacts of game context on a player's memory and evaluation of brands in video games. *Journal of Marketing Communications*, 23(6), 614–631. https://doi.org/10.1080/13527266.2016.1155074.

Yoon, G. (2019). Advertising in Digital Games: A Bibliometric Review. *Journal of Interactive Advertising*, 19(3), 204-218. https://doi.org/10.1080/15252019.2019.1699208.

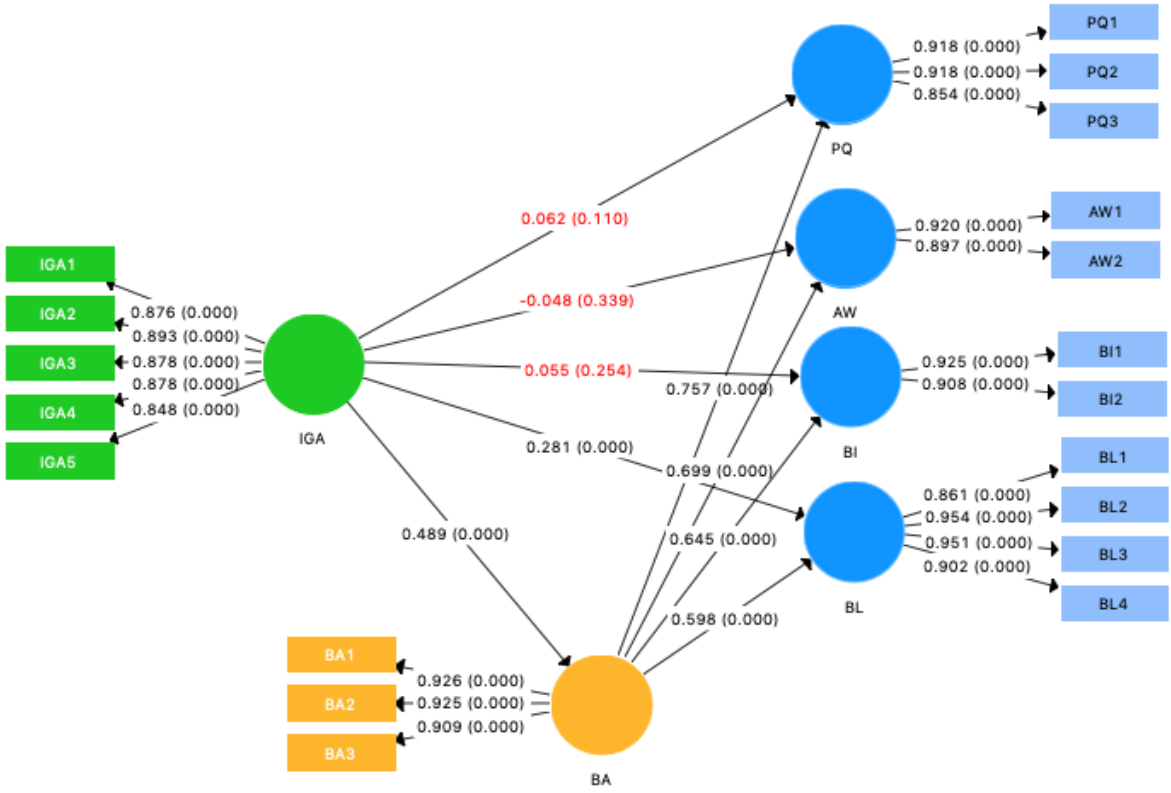
Youn, S., & Lee, M. (2003). *Antecedents and consequences of attitude toward the advergame in commercial web sites*. Proceedings of the 2003 Conference of the American Academy of Advertising, Pullman, WA: American Academy of Advertising, 128.

Zaichkowsky, J. L. (1994). The Personal Involvement Inventory: Reduction, Revision, and Application to Advertising, *Journal of Advertising*, 23(4), 59-70. https://doi.org/10.1080/00913367.1943.10673459.

Zeithaml, V., Berry, L., Parasuraman, A., 1996. The Behavioral Consequences of Service Quality*, Journal of Marketing,* 60(2), 31-46.

Appendix: PLS-SEM Analysis of IGA and BA influence on BE dimensions

1. Influence of IGA and BA on BE dimensions



Inner model: Path coefficients and p-values; Outer model: Outer loadings and p-values

2. Outer Loadings

	BA_	BE	EN	GE	IGA
AW1		**0.737**			
AW2		**0.705**			
BA1	**0.925**				
BA2	**0.924**				
BA3	**0.910**				
BI1		**0.761**			
BI2		**0.745**			
BL1		**0.851**			
BL2		**0.872**			
BL3		**0.856**			

BL4		0.796			
EN1			0.925		
EN2			0.916		
EN3			0.785		
EN4			0.812		
GE1				0.887	
GE2				0.874	
GE3				0.817	
IGA1					0.875
IGA2					0.890
IGA3					0.874
IGA4					0.880
IGA5					0.854
PQ1		0.789			
PQ2		0.791			
PQ3		0.844			

3. Construct Reliability and Validity

	Cronbach's Alpha	rho_A	Composite Reliability	AVE
AW	0.7886	0.7962	0.9041	0.8250
BA	0.9092	0.9096	0.9429	0.8463
BI	0.8101	0.8151	0.9131	0.8401
BL	0.9371	0.9391	0.9553	0.8426
EN	0.8832	0.9018	0.9199	0.7425
GE	0.8254	0.8526	0.8945	0.7389
IGA	0.9233	0.9241	0.9422	0.7652
PQ	0.8782	0.8818	0.9251	0.8048

4. Discriminant Validity

Heterotrait-Monotrait Ratio (HTMT)

	AW	BA	BI	BL	EN	GE	IGA	PQ
AW								
BA	0.7950							
BI	0.8808	0.7811						
BL	0.6717	0.7934	0.7793					
EN	0.5918	0.7602	0.6694	0.8362				
GE	0.6182	0.8094	0.6695	0.7688	0.9200			
IGA	0.3408	0.5318	0.4222	0.6162	0.6632	0.6654		
PQ	0.8105	0.8788	0.7358	0.8359	0.7259	0.7583	0.4809	

Fornell-Larcker Criterion

	AW	BA	BI	BL	EN	GE	IGA	PQ
AW	0.9083							
BA	0.6754	0.9200						
BI	0.7024	0.6716	0.9166					
BL	0.5806	0.7359	0.6820	0.9179				
EN	0.4846	0.6741	0.5632	0.7587	0.8617			
GE	0.4926	0.7006	0.5464	0.6811	0.7866	0.8596		
IGA	0.2932	0.4886	0.3698	0.5733	0.6047	0.5929	0.8748	
PQ	0.6764	0.7870	0.6186	0.7563	0.6333	0.6422	0.4314	0.8971

Cross Loadings

	AW	BA	BI	BL	EN	GE	IGA	PQ
AW1	0.9195	0.6482	0.6201	0.5416	0.4758	0.4845	0.2888	0.6474
AW2	0.8970	0.5754	0.6590	0.5121	0.4007	0.4065	0.2413	0.5781
BA1	0.6418	0.9256	0.6116	0.6528	0.6058	0.6619	0.4532	0.7306
BA2	0.6092	0.9248	0.6172	0.6611	0.6211	0.6214	0.4257	0.6894
BA3	0.6127	0.9094	0.6243	0.7152	0.6327	0.6491	0.4682	0.7501
BI1	0.6445	0.6384	0.9247	0.6473	0.5737	0.5478	0.4115	0.5541
BI2	0.6436	0.5910	0.9084	0.6012	0.4534	0.4496	0.2597	0.5816
BL1	0.6254	0.7336	0.6465	0.8611	0.6528	0.6308	0.4792	0.7200
BL2	0.5126	0.6929	0.6425	0.9541	0.7353	0.6635	0.5470	0.7285
BL3	0.5208	0.6735	0.6450	0.9509	0.7084	0.6351	0.5409	0.6786
BL4	0.4625	0.5896	0.5612	0.9025	0.6871	0.5630	0.5385	0.6413
EN1	0.3887	0.5891	0.4913	0.6769	0.9248	0.7208	0.5675	0.5833
EN2	0.3951	0.5819	0.5002	0.6792	0.9164	0.7197	0.5874	0.5626
EN3	0.5262	0.6284	0.5347	0.6180	0.7849	0.6546	0.4135	0.5619
EN4	0.3978	0.5461	0.4325	0.6449	0.8118	0.6164	0.4932	0.4834
GE1	0.3569	0.5982	0.4502	0.6157	0.7088	0.8868	0.6027	0.5434
GE2	0.5148	0.6414	0.5015	0.5898	0.6774	0.8736	0.4724	0.5713
GE3	0.4219	0.5723	0.4681	0.5456	0.6375	0.8168	0.4261	0.5500
IGA1	0.2498	0.4105	0.3255	0.4675	0.4998	0.5086	0.8750	0.3367
IGA2	0.2460	0.4372	0.3292	0.5123	0.4989	0.5156	0.8911	0.3930
IGA3	0.3067	0.4712	0.3754	0.5235	0.5220	0.5481	0.8753	0.3978
IGA4	0.2504	0.4082	0.3072	0.5231	0.5692	0.4801	0.8796	0.3913
IGA5	0.2253	0.4062	0.2764	0.4777	0.5545	0.5391	0.8524	0.3649
PQ1	0.6123	0.7515	0.5365	0.6293	0.5409	0.5721	0.3551	0.9176
PQ2	0.6331	0.6994	0.5653	0.6116	0.5020	0.5551	0.3470	0.9183
PQ3	0.5745	0.6636	0.5657	0.8039	0.6679	0.6035	0.4649	0.8540

5. Collinearity Statistics (VIF)

Inner VIF Values

	AW	BA	BI	BL	EN	GE	IGA	PQ
AW								
BA	1.3136		1.3136	1.3136				1.3136
BI								
BL								
EN								
GE								
IGA	1.3136	1.0000	1.3136	1.3136	1.0000	1.0000		1.3136
PQ								

6. R Square

	R Square	R Square Adjusted
AW	0.4580	0.4547
BA	0.2387	0.2364
BI	0.4534	0.4500
BL	0.6015	0.5991
EN	0.3657	0.3638
GE	0.3515	0.3496
PQ	0.6223	0.6200

7. f Square

	AW	BA	BI	BL	EN	GE	IGA	PQ
AW								
BA	0.6865		0.5791	0.6847				1.1548
BI								
BL								
EN								
GE								
IGA	0.0033	0.3136	0.0042	0.1506	0.5765	0.5421		0.0076
PQ								

8. Path Coefficients

Mean, STDEV, T-Values, P-Values

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
BA -> AW	0.6991	0.6960	0.0490	14.2703	**0.0000**
BA -> BI	0.6449	0.6467	0.0464	13.9006	**0.0000**
BA -> BL	0.5987	0.5975	0.0432	13.8619	**0.0000**
BA -> PQ	0.7569	0.7550	0.0399	18.9515	**0.0000**
IGA -> AW	-0.0484	-0.0446	0.0473	1.0231	**0.3065**
IGA -> BA	0.4886	0.4914	0.0561	8.7040	**0.0000**
IGA -> BI	0.0548	0.0537	0.0476	1.1493	**0.2507**
IGA -> BL	0.2808	0.2796	0.0427	6.5732	**0.0000**
IGA -> EN	0.6047	0.6057	0.0436	13.8565	**0.0000**
IGA -> GE	0.5929	0.5958	0.0456	12.9985	**0.0000**
IGA -> PQ	0.0616	0.0635	0.0394	1.5642	**0.1181**

9. Total Effects

Mean, STDEV, T-Values, P-Values

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
BA -> AW	0.6991	0.6960	0.0490	14.2703	**0.0000**
BA -> BI	0.6449	0.6467	0.0464	13.9006	**0.0000**
BA -> BL	0.5987	0.5975	0.0432	13.8619	**0.0000**
BA -> PQ	0.7569	0.7550	0.0399	18.9515	**0.0000**
IGA -> AW	0.2932	0.2966	0.0553	5.3016	**0.0000**
IGA -> BA	0.4886	0.4914	0.0561	8.7040	**0.0000**
IGA -> BI	0.3698	0.3711	0.0492	7.5123	**0.0000**
IGA -> BL	0.5733	0.5722	0.0450	12.7280	**0.0000**
IGA -> EN	0.6047	0.6057	0.0436	13.8565	**0.0000**
IGA -> GE	0.5929	0.5958	0.0456	12.9985	**0.0000**
IGA -> PQ	0.4314	0.4337	0.0522	8.2731	**0.0000**

10. Specific Indirect Effects

Mean, STDEV, T-Values, P-Values

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
IGA -> BA -> BL	0.2925	0.2926	0.0318	9.1916	**0.0000**
IGA -> BA -> AW	0.3416	0.3412	0.0400	8.5299	**0.0000**
IGA -> BA -> BI	0.3151	0.3174	0.0400	7.8758	**0.0000**
IGA -> BA -> PQ	0.3698	0.3702	0.0397	9.3149	**0.0000**

Authors

Prof. Dr. Sonja **Klose** earned her Ph.D. in Marketing at the WHU – Otto Beisheim School of Management in 2007. Afterwards, she worked for several start-ups as director of marketing before she became Professor of Marketing in 2017, first at FOM university, now at the Berlin School of Economics and Law (HWR Berlin). She has practical as well as academic experience in the following fields: Online and Offline Marketing, Serices Marketing, CRM, B2C and B2B Marketing.

Ngoc Anh **Truong** earned her Master's Degree in International Marketing Management at Berlin School of Economics and Law in 2021. She has more than six years experience working in B2B and B2C marketing with a focus on data analytics, digital marketing, and brand management. She is currently employed by a young F&B company in Berlin