

Stockholm School of Economics

Msc Thesis in Business and Management

Video Ad Attributes and Engagement Intentions

A quantitative study of the effects of video ad attributes on viewers' engagement intentions

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Abstract

Mobile games have become more popular around the world, especially during the time of COVID-19. As a result, mobile game publishers spend more resources on mobile game marketing, and video ads have become a practice that is widely adopted. A review of previous research reveals a lack of focus and understanding in mobile game ads, and confusion and misinterpretation about several types of mobile game ads exist across studies. This study aims to build quantitative relationships between engagement intentions of viewers and video ad attributes including graphic performance, gameplay, story attractiveness and human presence, following the terminology proposed in Game Ads Framework. The moderating effect of social media and mobile game behavior, and the mediating effect of credibility and extent of surprise are also examined. The findings in this study indicate positive relationships between engagement intentions and graphic performance, gameplay, and story attractiveness, and gameplay attractiveness is the factor that has the most impact on engagement intentions. Video ads with human presence have higher engagement intentions than video ads without human presence. The moderating effect of social media and mobile game behavior, and the mediating effect of perceived credibility are found for certain video ad attributes.

Keywords: Mobile Games, Video Ads, Engagement Intentions, Ad Attributes, Social Media

Acknowledgements

First of all, our heartfelt thanks go to all the participants who shared their experience and opinions on mobile game advertising with us. It is them who made this study possible.

Particularly, we would like to express our gratitude to Gustav Almqvist for his generous advice and guidance during the proposal and the writing of our thesis. Professor Almqvist's expertise in advertising and scientific research have broadened our horizons and encouraged us to dig deeper into the topic. We are also grateful for the support of the Department of Management and Organization.

Lastly, we appreciate Duwi S Pinandityo, Haochen Li, Siqi Shen, Linjie Zhang and Runshi Li for their quality feedbacks and help on thesis writing and data analysis.

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1. Introduction

“The Internet is having an impact today that is comparable to what the world felt when Gutenberg introduced the idea of printing. The Internet, social media, and new communication technologies are major game changers in marketing”

Kotler (2013).

In 2020, the revenue of the global game market reached USD 159.3 billion with a 9.3% YoY increase. The robust performance is partly driven by lockdown policies implemented around the world to stop the spreads of COVID-19. People spend more time at home and playing video games becomes more popular. Consequently, revenues of games companies have increased despite the worsened worldwide economy overall. In particular, the revenue from mobile games reached USD 63.6 billion with a 15.8% YoY increase, and the mobile game market continues to be the largest segment, taking up around 40% percent of the global video games market share (Newzoo, 2020). China is the largest mobile game market in the world in 2020 with total revenue of USD 35,265 million, almost double the annual revenue of USD 18,250 million in the second largest market, United States (Statista, 2021)

Players spent more time and money on mobile gaming in 2020 than in previous years due to COVID-19 (Irpan et al., 2021). Compared to games available on other devices such as PC and console (e.g., PS4, Xbox One S, and Nintendo Switch), mobile games are easier to learn and more convenient to play thanks to touch screens of smartphones and small device size (Galehantomo PS, G., 2015). At the same time, more games companies that used to focus on PC or console games have taken the mobile game market more seriously: Activision Blizzard, the developer and publisher behind famous titles such as "Call of Duty" and "Overwatch," is expanding its business in mobile games, and Electronic Arts, another major participant in the market, is also investing heavily in the mobile game sector (Williams, 2020; Matthew, 2020).

As more attention shifts to the mobile game market, the ad for mobile games is heavily invested to help mobile game companies to reach more players. Spend on ads of game installation totaled \$22 billion in 2019, and is projected to reach \$48.5 billion by 2022, more than doubling the number in 2019 (Newzoo, 2020). One major channel to distribute these ads are social media networks, such as Facebook, Twitter, and Instagram. Nowadays social media makes ad distribution more effective and efficient. In particular, Facebook allows ads to target specific groups of Facebook users, and companies that want to run ads on Facebook can specify the desired user profile with criteria such as location, demographics, interests, behaviors, and engagement (Lee, 2020). Such a business model is known as the media model in the revenue logics of mobile entertainment field, and it involves numerous agreements in which service providers and audiences are provided with information about each other, with social media acting as the mediator (Rajala et al., 2007). The relationships among social media, mobile game publisher and ads audience are shown in Figure 1. Major ads networks are Google Ads and Facebook, these two networks hold a dominant position on Android and IOS, respectively (Frid, 2020).

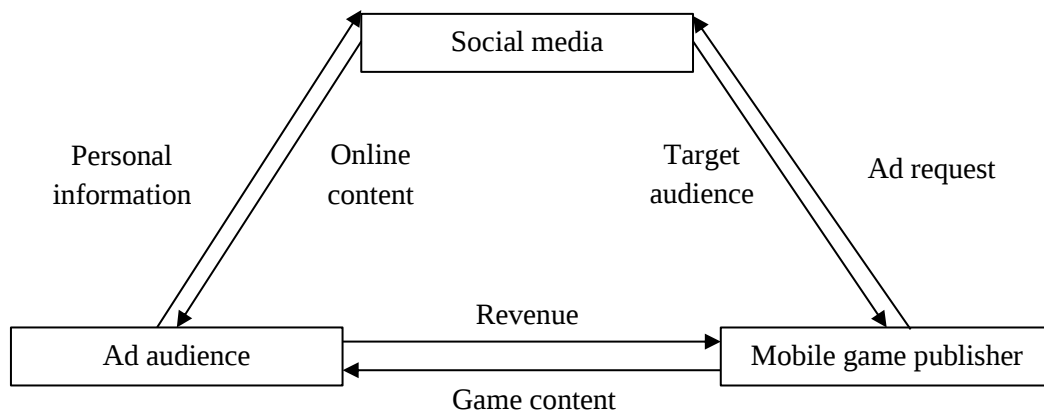


Figure 1: Relationship between social media, ads audience and mobile game publisher

China is one of the biggest social media markets, despite media such as Facebook, Instagram and YouTube being blocked to be accessed, domestic social media platforms are being heavily and widely used. According to data report of Thomala (2020, 2021), the most popular domestic social media platforms include WeChat with 1,225 million active monthly users, followed by QQ with 647 million active monthly users, Douyin with 514.15 million active monthly users, Weibo with 511 million active monthly users, Kuaishou with 400.38 million active monthly users and Bilibili with 130.28 million active monthly users, as presented in Figure 2.

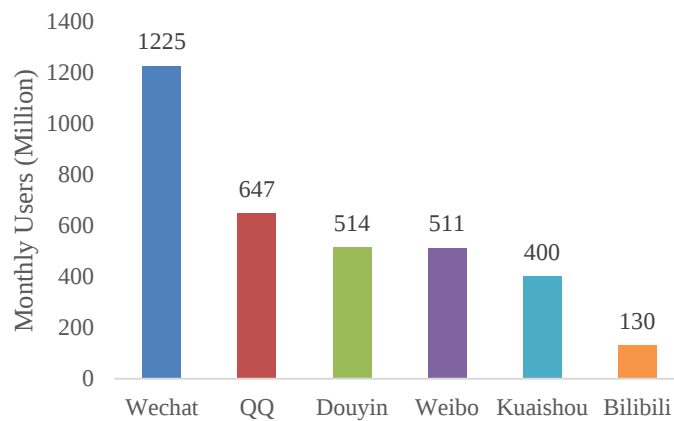


Figure 2: Monthly active users of social media platforms in China

WeChat, as the most widespread app for social media users in China, has developed from just an instant messaging app to an all-around platform (Wang et al., 2019). Like WhatsApp and Messenger, it enables users to send messages in different formats such as texts, pictures, videos, voice, etc. Like Facebook and Instagram, WeChat provides a sharing space for posts from whoever is on the user's friend list (Wang et al., 2019). QQ, as another popular instant messaging app used by Chinese users, was former Chinese chatting Champion and the first Chinese chat app before WeChat was designed to be a multipurpose ecosystem with commercial as well as non-commercial Mini-Programs and took over the Chinese market. As a multifunctional communication platform, QQ has slight differences from WeChat in functions, but QQ is still a more powerful desktop messenger compared to WeChat (Ma and Au, 2014). Douyin is the Chinese version of Tiktok, a social media platform with short-form videos made by users to share genres such as dance, comedy, education, etc. (Du et al., 2020) Weibo is the most used micro blogging platform in China and is like Twitter (Sullivan, 2014). Kuaishou is another short-video-sharing platform which is more popular among rural areas while Douyin is more widely used among

younger users and users from 1st and 2nd tier Chinese cities (Lin and de Kloet., 2019). Bilibili is a Chinese video sharing website, like YouTube. The platform not only provides various genres of videos and live streaming services, but also supports viewers to leave overlaid commentary on those videos (Chen, 2018).

Mobile game ads can be further categorized into the following three types:

Advergaming

Advergaming is a method to promote a brand, service, or product with gameplay integrated in (Kretschmer, 2004), which are similar with traditional ads. The primary goal of attention and persuasion for the sole brand is not the same as other branded contents in games such as in-game ads and product placement (Youn and Lee, 2005).

In-game Ads

The placement of brands in games is identified as in-game ads (Yang et al. 2006), including posters and the logo of sponsor in games, mostly in sports and racing games (Schwarz, 2005). The early appearance of in-game ads started in the late 1980s when Marlboro billboards were placed in the racing games of Sega Games (Chambers, 2005).

Around-game Ads

Around-game ad has been identified as having one of the four placement categories: banners, cross-promotion (including cross-media promotion), interstitials, or sponsorship (Smith et al., 2014). The key to this around-game ad is that it conveys promoted information such that players do not feel intruded (Smith et al., 2014). Video ads on social media networks fall into interstitials of around-game ads.

1.1 Problematization

One unique aspect of mobile games is that they sometimes require players to interact with each other in certain ways (Kirschner, 2014), which happens both in the games and on social media. In addition, social meaning is one of the motivators that drive people to play video games (Wang and Sun, 2011), thus the integration of social media and mobile games would accelerate the realization of social meaning of players because they can gain positive feedback from friends the moment their game rewards or achievements are shared on social media, and the information are faster diffused through this channel than from external sources (Yoo et al. 2016). As suggested by Yaakop et al. (2013), by presenting entertaining content in a timely manner, advertisers could make consumers interact electronically in an effective way. And ads on social media will soon replace a substantial proportion of ads on TV and other traditional media due to the feature of customization of social media ads, enabling them to capture more attention from targeted customers (Yaakop and Hemsley-Brown, 2011).

From another point of view, the digitalization of distribution has created many new business models in the video game industry, including freemium, subscription, advertisement, and free-to-play (Davidovici-Nora, 2014). In 2020, mobile games with the highest gross earning worldwide are PUBG Mobile (Tencent Games and Crafton, 2018), Honor of Kings (Tencent Games, 2015), Pokémon GO (Niantic et al., 2016), Coin Master (Moon Active, 2015), Roblox (Roblox Corporation, 2006), and Monster Strike (Mixi, 2013, Clement, 2021), all of which adopt a free-to-play model along with other models. In other words, players do not bear financial costs beforehand. This distinct free-to-play mobile game ads from other types of products or services that require payments in advance. That is so

called “A difference in business model implies a difference in market strategy in place” (Zott and Amit, 2008).

Video ads on social media represent a market strategy widely adopted by mobile game publishers (Frid, 2020). Some of them have gone viral on the Internet, generating cost-free views and active shares from viewers. Lily’s Garden (Tactile, 2019) is a match-three mobile game like Candy Crush Saga (King, 2012), but famous for its ads with dramatic stories that usually come with unexpected twists (Feldman, 2019). The ads of Lily’s Garden (Tactile, 2019) have become memes and gained attention from not only gamers but larger group of social media users (Feldman, 2019). In one of the heated ads videos, viewers see a 3-D animation that resembles a medium-budget cartoon for children, which tells about a young woman, Lily Roberts, left behind by her boyfriend because of pregnancy. The length of the video is around 15 seconds. In this ad, the gameplay was not presented at all, which was not commonly seen in other mobile game ads at the time.

The success of ads of Lily’s Garden (Tactile, 2019) is inspiring but also leads to questions, one of which is that how attributes in mobile game video ads (e.g., gameplay, storyline, graphic performance) work to attract different groups of viewers. However, mobile game marketing is still in its early stage and is studied from different academic fields (Shankar and Balasubramanian, 2009; Shankar et al., 2010; Varnali and Toker, 2010). The topic has been studied from various aspects such as permission giving (Barwise and Strong, 2002), relationship building (Leppaniemi and Karjaluto, 2005), and SMS acceptance (Tsang et al., 2004). Surprisingly, mobile game ads do not get enough attention from researchers (Salo and Karjaluto, 2007; Ben and Porter, 2010; Komulainen et al., 2013), while mobile games attract more audiences globally (Newzoo, 2020). Within the limited research on mobile game ads, many researchers have not come to an agreement on terminology, leading to confusion and contradiction, and most studies focus on advergame and in-game ads, rather than around-game ads. Nelson (2002) and Smith et al. (2014) discussed around-game ads, but there still lacks more detailed studies in the field. Thus, more insights into an around-game ads context are needed to better make sense of the fast-growing business (Yaakop et al., 2013). The first step is to build a relationship between attributes in video ads and the intentions of users to engage (engagement is defined by clicking the video to enter the download page of the game) in an around-game ads context, which would help game publishers evaluate the performance of video ad attributes to audience and explain the success of popular video ads in the industry. Moreover, the engagement intentions of viewers with different gaming and social media behaviors may vary, which should also be considered. Besides, the roles of perceived credibility of video ads and emotional factors such as the extent of surprise can also provide valuable insights. What is also worth mentioning is the lack of research on game ads in the Chinese market, because most respondents in previous studies are not Chinese mobile game players, which is another research gap in the field. Since China is the top1 mobile game market and has a unique social media ecosystem from western countries, the findings of this study may help global game publishers and researchers further understand the mechanics of mobile game ads in China. Thus, it is necessary to conduct studies on mobile game video ads in the Chinese market.

1.2 Purpose, Aim and Expected Contribution

The study aims to establish quantitative relationships between video ad attributes and the intention to engage with ads, and to examine the moderating effect of gaming and social media behavior. What is more, the mediating effect of perceived ads credibility and the extent of surprise ads brought to viewers are also tested. Human presence, an independent variable in the study, is also examined. The relationships in the study may be applied to other industries including movie and tourism industry,

where video ads are common. The attributes in the study except gameplay are also applicable in such industries. Thus, the expected contributions of the study are: (i) to explore the effects of mobile game video ad attributes on engagement intentions, (ii) to examine the effect of gaming and social media behavior on the relationship engagement intentions and video ad attributes, (iii) to shed some light on the role of ads credibility and the extent of surprise in the ads evaluation process, (iv) to explore the uniqueness of mobile game ads in China, and (v) to provide insights to practitioners seeking to attract audience attention through short video ads. The study is expected to contribute empirically to mobile game publishers who want to better allocate resources and produce effective video ads and contribute theoretically to the field of around-game ads.

1.2.1 Research Question

The study aims to answer the following questions: (i) which video attributes have the strongest impact on the engagement intentions of viewers? (ii) do the effects in RQ1 vary according to different levels of moderators and mediators?

1.3 Delimitations

The focus of the study is the around-game ads. As discussed previously, around-game ads consist of four aspects: banners, cross-promotion, interstitials, and sponsorship. The thesis is delimited to interstitials, which refers to a form of in-stream video ads that is non-skippable (Vogt, 2017) and is common on social media. The study will focus on mobile game interstitials on Facebook for its dominance in the mobile ads business, making the ads samples collected from Facebook representatives. The length of the video samples is delimited from 15 seconds to 30 seconds. In terms of video games, they can be categorized into four genres: strategy, simulation, role-playing, and action (Apperley, 2006). The sample videos will follow the requirement.

Attributes utilized in the study are online game technology factors including storytelling, game graphics, and gameplay (Zhao and Fang, 2009). More detailed definitions of these variables will be presented in the Design section of the Methodology chapter.

The study is further delimited to Chinese video ads viewers. Social media behavior is measured by the number of social media networks used at least three times a week, and gaming behavior is measured by two criteria: time spent on mobile games weekly and number of preferred game genres.

1.4 Research Outline

The research will be conducted in an experimental and quantitative approach. Participants with diverse gaming and social media behaviors will be shown video ads of mobile games of different attributes. Then they will be asked to fill up questionnaires for analysis. The results of the questionnaires will be compared in groups with different gaming and social media behaviors. A deductive method will be taken in the hypothesis generation process. Results of the questionnaires will be provided according to each hypothesis, and then summarized in the present major findings. Both empirical and theoretical implications will be presented following major findings, based on which conclusions will be drawn. The thesis is divided into six sections: (i) Introduction, (ii) Theory, (iii) Methodology, (iv) Results and Findings, (v) Discussion and (vi) Conclusions.

2. Theory

This chapter contains two parts: review of literature and hypothesis generation. To better understand the logic of the problematization in the study and the current research gap, the review of literature will present research on mobile game ads and on ads and psychology. Based on the previous literature, the conceptual model will be presented, and hypotheses of the study will be generated.

2.1 Review of Literature

In this chapter, related literature will be presented in the following order: (i) Game Ads Framework, (ii) video ad attributes to explore potential effects of each attribute, (iii) human presence in video ads, (iv) social media behavior, and (v) mobile gaming behavior to build a connection of experience of viewers in social media and gaming and their perception towards mobile game video ads. Summary of literature review will be given at the end of the chapter.

2.1.1 Game Ads Framework

Most literature regarding video game ads focuses on advergame and in-game ads (Mallinckrodt and Mizerski, 2007; Yang et al. 2006; Terlutter and Capella, 2013), due to a lack of consensus on the mobile game ads categorization, leading to confusion, and even contradiction. Nelson (2006) intended to discuss advergaming, but his reasoning was based on findings in an in-game ads context; Kim (2006) argued that in-game ads can be called “advergame” and described in-game ads as providing gamers with a realistic experience so that game publishers can achieve indirect product promotion; Lehu (2007) asserted that advergames, in-game ads, and ads are similar, if not the same, to describe product placements in video games; Panda (2008) and Bleumers et al. (2012) held the view that advergame is a subset of in-game ads, while Nairn and Hang (2012) argued that in-game ads are part of advergames. What is more, Jung et al. (2011) focused on characteristics of in-game ads but used a puzzle game that utilized advergame to promote products as an example. Such disagreement on the classification of mobile game ads hinders the understanding the topic and further exploration. Therefore, one of the priorities for the academia is to build consensus on terminology.

In 2007, to address the rise of gaming in the US, the Interactive Ads Bureau (IAB) developed a framework in a report for game ads (Smith et al., 2014). The framework elaborated the concept of the associations of different categories of ads under one term “game ads”. In 2010, the report was updated and proposed three facets of game ads: advergames, in-game ads, and around-game ads (Figure 3). Based on the conceptual framework of IAB, Smith et al. (2014) suggested that “game ads” should be defined as the connection of promoted messages with video games to target players with advergames, in-game ads, or in-game ads activities, and the proposed definitions for the three categories are listed in Table 1.

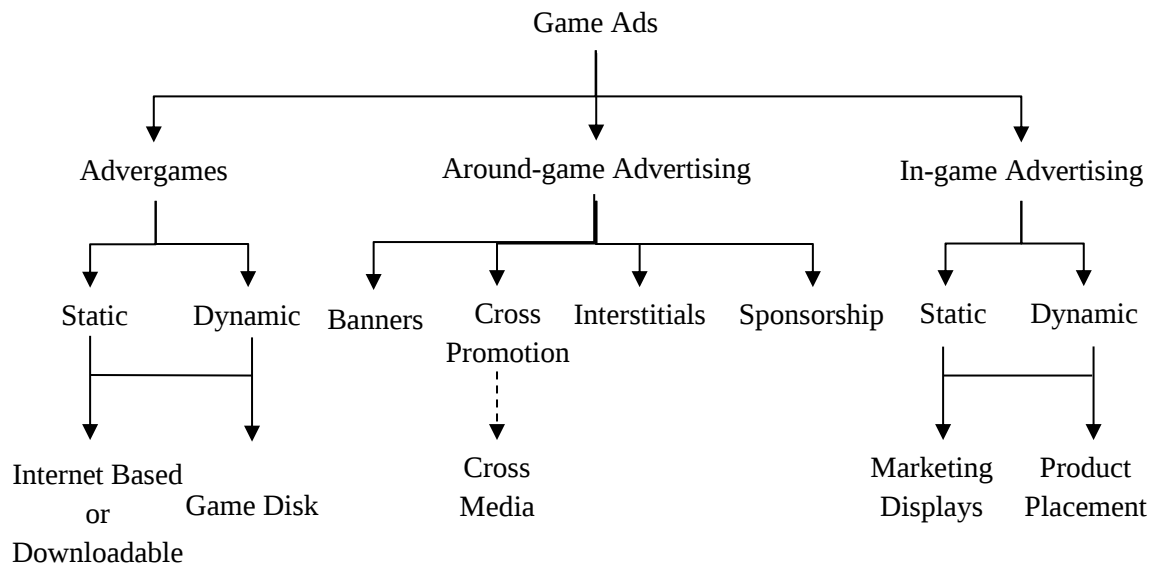


Figure 3: Game Advertising Framework

Category	Definition
Advergames	A digital game specially designed for advertising and promotion of a product, service, or a brand via certain medium.
In-game ads	The integration and display of products and brands in scenes of video games.
Around-game ads	Ads and promotion that are linked to video games with non-intrusive content from associated third-party products.

Table 1: Categories for game ads (Smith et al., 2014)

In their later research, Smith et al. (2014) further looked at the attitude of gamers towards product-game associations through around-game ads. They found that (i) Exposure to around-game ads softens attitudes towards general ads; (ii) Exposure to around-game ads weakens negative attitudes towards game ads in general. But the study has a small sample size- only 32 participants. Thus, whether the findings in this study can be applied more generally is questionable. According to the framework, mobile game video ads on social media are categorized as interstitials, which are linked with additional web pages, where audiences are redirected from another webpage (Bae, 2003).

2.1.2 Video Ads Attributes

In the current study, four attributes are identified and discussed: graphics, gameplay, storytelling and human presence, and their significance to viewers will be discussed with the literature presented below.

Graphics

The definition of “Graphics” may vary for each graphic content consumer, but it consists of concepts such as color, video technical quality, aesthetic design, and other visual contents. Color is able to guide viewers to recognize corporate brands, which increases purchase intentions and profit (Chang and Lin, 2010); high saturation increases the extend of excitement and shows a positive relationship with perceived excitement level in brand personality (Labrecque and Milne, 2012); the ability of a consumer to memorize the brand information contained in an ad is correlated with visual imagery of the ads (Mikhailitchenko et al. 2009). With various levels of aesthetic treatment, the same content that has a higher level of treatment is perceived to have higher credibility (Robins and Holmes, 2008). In addition,

low-quality videos tend to make younger viewers see the organization as less credible and low in value (Chen et al., 2017), which is a finding that is worth paying attention to since many mobile gamers are young (Clement, 2021).

Storytelling

Storytelling, which utilizes narrative, communicates particular ideas with the focus on attract the attention of viewers in the mountainous messages and have thrived for a long time (Mistewicz, 2011; Czarniawska, 1997). Sometimes ads of mobile games present intriguing stories that attract viewers. The advantages of storytelling video ads over video ads with none or weak story in terms of consumer feedbacks was found, suggesting storytelling video ads generate better attitude toward the brand, positive word of mouth, more sharing and viewing activities (rather than skip the video ads) and storytelling video ads were more effective in creating an emotional connection with the brand (COKER et al., 2017). In their research, Kang et al. (2020) confirmed previous perception about the strength of storytelling in ads and asserted that narrative story is positively related to responses toward the ads, indicating that the more viewers imagine themselves in the story, the more possible they are to see the ads as creative, touching, and meaningful. Despite the advantages of storytelling in ads, advertisers have not fully utilized storytelling in their practice (Dąbrowska, 2011), though a narrative ad generates higher awareness of itself, purchase intentions, and engagement while building a more positive perception of the product (Zatwarnicka-Madura and Nowacki, 2018).

Gameplay (Product Attribute)

Gameplay refers to the way a player interacts with a game (Lindley, 2004). There is no direct research that focuses on gameplay ads in the academic community. However, gameplay can be treated as a “product attribute” in a more abstract manner. Fishbein and Ajzen (1977) presented a model that measures the attitude, or an overall evaluation toward a certain concept. The model suggested that beliefs are the only mediators of attitude formation. But the concept of “beliefs” was not clear enough in whether product attribute beliefs are included, which is why a later research by Mitchell and Olson (1981) proved that product attribute beliefs in fact had a major mediation effect on brand attitudes, complementing the theory of Fishbein and Ajzen. After the effect of gameplay (product attribute) is confirmed, the classification of genres of games is necessary. Apperley (2006) discussed the concept of genre in video games and addressed the fragmented definitions of game genres and proposed a clearer categorization of game genres: simulation, strategy, role-playing and action. The thesis follows this categorization and designs the questionnaire accordingly.

Human Presence

The effect of human presence in ads has been studied from several aspects. The presence of a human in ads improves the attitude toward products, which (i) is much more positive after consumers receive a message from a real person but (ii) does not vary to a great extent a basic message is conveyed without human presence (Jin and Bolebruch, 2009). However, when a real human is present in ads, the effect of physical attractiveness is debated. Brumbaugh (1993) asserted that the physical attractiveness of a model in an ad is positively linked with the attitude towards products, while Caballero and Solomon (1984) found that both males and females were more responsive to the low attractiveness condition. In addition to the physical attraction of spokesmodels, perception of viewers regarding an ad is also affected by personality judgement made by the viewer (Brumbaugh, 1993).

2.1.3 Social Media Behavior

The social media use in this research is perceived as the audience connecting, communicating, and interacting with each other through instant messaging and social networking websites, concluded by Correa et al. (2010). The measures of social media use among researchers are chosen to be either a single measure such as duration time and use intensity or more specific ones including but not limited to status updates, information seeking, and the number of friends (Liu and Campbell, 2017). The subject about how consumers use social media is catching more attention as critical forms of social media data used for researchers and marketers to gain insights into generating more efficient marketing and communication strategies (Parsons and Lepkowska-White, 2018; Hruska and Maresova, 2020). In general, several scholars have emphasized the contribution of social media platforms to marketing activities like brand management (De Vries et al., 2012), purchasing intentions and behavior (Chang et al., 2015; Kumar et al., 2016; Felix et al., 2017), and customer engagement (Malthouse et al., 2013).

Benefits of social media are further exposed to marketing when marketers and researchers have figured out online social interaction has a significant impact on brand placement and brand loyalty improving for brand managers and advertisers. It is recognized that consumers use social media as a medium to help maintain engaged relationships with brands, and as a shortcut to actively approach new products (De Vries et al., 2012). The use behavior of social media platforms has been studied and viewed important in consumer purchasing decisions. One study concluded that for developing countries like India, social media usage measured by frequency and the hours spent leads to changes of attitudes and behaviors (Thoumrungroje, 2014). Information from social media platforms is sought and used by consumers to guide them on consuming behaviors. Electronic Word-of-Mouth (eWOM), as one type of information, shows the mediating effect of a positive relationship between usage of social media and purchasing intentions based on a study on Lebanon university students conducted by Baalbaki et al. (2017). However, in the study of Gupta and Vohra (2019), eWOM was proved to be invalid as a mediating role when they further testified the positive linkage between social media usage intensity and consumer behaviors. Traditionally, customers are viewed passive in response to ads through purchasing behavior. Yet by social media, Malthouse et al. (2013) believed that customers are empowered to change from passive to active participants who might create their contents and engage by using social media. Researchers also tested that the intensity of social media use has a positive association with customer engagement (Dijkmans et al., 2015). Customer engagement is classified into two levels: lower engagement and higher engagement, and three comparisons: acquisition, retention, and termination--acquisition effort at a lower engagement level represent simple information process and basic interaction by “liking” it or “sharing” it from viewers, while acquisition effort at a higher engagement level represents the more uncontrollable distribution of independent reviews on products and wild exposure of company messages by customers (Malthouse et al., 2013).

The uses and gratification (U&G) approach has been proposed and further applied from media use into new media use to stress the use of media to meet needs and wants of users, resulting from the social environment and acting as a motivator of using media. One of the crucial assumptions is that people consciously choose and use media that meet their needs (Katz et al., 1973). From another standpoint of psychology, researchers have applied flow theory to explain individuals’ use of social media when the flow is defined as “the feeling of enjoyment and pleasure arising from deep immersion in an activity”; moreover, they pointed out that flow is experienced on the occasion of full immersion and engagement in certain activities (Hu et al., 2017). Chang et al. (2015) further suggested that social media is penetrating people’s leisure activities, when users form a positive attitude towards the use of social media and believe its benefits.

Relevant studies do not only try to explain the motivation behind social media use but to study relationships between user characteristics and the usage of social media. Researchers found that young adults from 18 to 29 years old, as heavy users of social media, spent more time (3 hours per day on average) on social media such as Facebook, Twitter, YouTube, Snapchat, etc. than older adults did; ages are negatively associated with social media use frequency and the extent of education is positively associated with social media usage. What is more, users of Facebook and Instagram are suggested to be targeted if companies want to level up brand awareness (Hruska and Maresova, 2020). Correa et al. (2010) examined the positive association between social media use frequency and openness to experience where curiosity and novelty-seeking are reflected.

From the industrial perspective, connection between social media usage and marketing in some industries has been studied by marketers and researchers. There has been a widely proved connection between social media and the luxury industry. For instance, one research showed a considerable influence of social media on luxury cosmetic products consumption (Stokinger and Ozuem, 2018). According to the other study from Tracy and Michael (2014), consumer behaviors can be impacted by the extensive use of social media which encourages them to spend on unnecessary luxury products. Different behaviors of social media also result in diverse patterns of planning and making decisions on tourist trips for consumers in the tourism industry, according to the study from Hysa et al (2021); a combination of identification on emotions, personality traits from a single user and analysis of user behavior has been stressed to be leveraged on marketing strategies for sustainable development.

2.1.4 Mobile Game Behavior

The popularity of mobile games rises with the increasing popularity of mobile devices including mobile phones. Some research on reasons behind mobile game playing have examined from two aspects--active participation and diversion. Wu et al. (2010) confirmed players' perception of gratifications and service mechanisms drive players' proactive stickiness to an online game. Zhou et al. (2013) identified factors affecting adoption and usage of mobile games according to the flow theory that improving flow, social influence, and usage cost could facilitate player behaviors. On the other hand, researchers such as Liu et al. (2018) regarded the adoption of game players as situational and regarded diversion as the main intention of mobile games playing to pass time. Based on the Self Determination Theory (SDT) applied in the context of mobile gaming, when mobile games are assumed as a necessity of need satisfaction, three basic psychological needs are proposed by Deci and Ryan (1985): competence, autonomy, and relatedness; then Ryan et al. (2006) developed the Player Experience of Need Satisfaction Scales (PENS) and found that the satisfaction of these three psychological needs could contribute to the intrinsic motivation of video game players. To further examine this motivation, McCauley et al. (2018) identified the experience of flow, social escapism, and competition as drivers of media use that bring the enjoyment of mobile games.

Researchers also pointed out time flexibility, relating to gameplay time, the ability of control and determination on that period potentially affect the intentions to play and the actual time of game playing (Hsiao and Chen, 2016; Ghozland, 2010). However, in the study of de Souza et al. (2017), time flexibility was not confirmed to positively affect the intentions to play, which means that users play games while doing other things instead of playing games in spare time; one explanation is that one-third of the samples are already highly active players. Nevertheless, the authors confirmed that other factors such as social interaction and diversion (willingness of distraction or escaping from some problems or other factors) have a positive impact on the intentions to play (de Souza et al., 2017).

When researching factors that could influence mobile game choices and play behaviors, three player characteristics: age, gender, and playfulness are identified and examined. Kim (2013) found out that females play more mobile games than males do; players in a wide range of age are engaged in mobile games. Barnett (2012) posited that different perceptions and experiences in leisure activities by playful individuals result in different extent of motives. However, McCauley et al. (2018) testified that there is only a weak moderating effect of those player characteristics on the influence of motivation that drives enjoyment, which implies that modern mobile games play relies on enjoyment driven by an individual pursuit of the satisfaction of the intrinsic motivations instead of by playfulness, age, and gender. Considering relationships between game playing and players' personality, Ventura et al. (2012) proposed that the act of playing video games itself support the existence of openness; Seok and DaCosta (2015) proved openness to be the most consistent predictor of mobile gaming.

2.1.5 Engagement Intentions

Behavioral intention, from the psychological perspective, refers to a person's motivation to perform a certain behavior and lies in the center of theories of attitude-behavior relations (Sheeran, 2002). The intention has been viewed as one important predictor of behavior according to the theory of planned behavior by Ajzen (1985). The positive influence of purchase intention on purchase behavior has been confirmed as managerial implications such as in eco-friendly goods industry (Trivedi et al., 2018).

The growth of mobile technology has created an environment where mobile users are becoming increasingly motivated to engage in different activities, which increases the likelihood of their willingness of engaging in the future (Chapman et al., 1999; Oliver, 1980). It has been stated that motivation driven by social, utilitarian, or hedonic factors would lead users from engagement motivation to engagement intention (Kim et al., 2013). In the context of social media, digital video ads are used one of most popular tools for marketers to reach customers who are users of social media platforms. Yang and Zhao (2021) have investigated and proved that emotional appeals generate more influential effect in driving engagement intentions than information processing styles do in video ads, while some previous research has studied and confirmed the effect of information processing styles on consumer engagement intentions towards print ads (Ruiz and Sicilia, 2004).

The connection between engagement and purchase intention has been discussed by multiple literature, and the findings are consistent with each other in general. The study of Kilger and Romer (2007) supported a strong relationship between engagement in media and purchase intent and ultimately advertising receptivity. Similar to this finding, Algharabat (2018) asserted that user engagement positively impacts co-creation value and purchase intentions of consumers. Besides, Husnain et al. (2017) found that social network marketing is significantly related to consumer purchase intention, and they further demonstrated that consumer engagement acts as a partial mediator in how social network marketing impacts on consumer purchase intention.

While intentions can be used to predict behaviors, the gap between them can also not be neglected that makes real performance of intended behavior be inconsistent with the intention. To reduce the gap and make the intention be more efficiently predictable for the behavior, one factor introduced by Sheeran (2002) is the behavior to be predicted should be better to use a single action rather than a goal that can be only achieved by a variety of single actions. Therefore, in this study, willingness to click is used as specific behavior intention of engagement intention, which is to further imply how video ads attributes can make potential contribution on the behavior of clicking.

2.1.6 Summary

In general, the authors found that previous research have not paid full attention to mobile game ads and lack consensus in the categorization of game ads. Therefore, the authors decide to follow a rigorous categorization proposed by Smith et al. (2014) and advocate to reach an agreement in terminology. In terms of video ads attributes, previous studies have not built an explicit relationship with engagement intentions for digital services, only focused on traditional products, which do not share the same business models with mobile games. Social media usage of consumers has been considered as one of the important references to learn how ads can bring diverse results to viewers with different social media behaviors (Appel et al., 2020). However, few have examined, from an empirical perspective, whether social media behaviors of consumers might influence the effect of social media ads on the intentions of customer engagement in industries that provide products or services as applications to be used on mobile phones. Besides, most existing research on mobile game behavior are related to motivation of game playing and personalities that could be represented by different game playing behaviors. Those findings bring managerial implications mostly for game developers while from the ad perspective, the potential relationship between mobile game behavior and the level of customer engagement intentions in response to video ads is omitted. The differences in context of previous literature make the applicability of previous findings questionable. Overall, these limitations lead to bringing mobile game video ads on further research with an emphasis on the effect of social media behavior and mobile game behavior of viewers.

2.2 Conceptual Framework and Hypothesis Generation

The conceptual framework of this study, as shown in Figure 4, is a synthesis of Game Ads Framework; video ad attributes, human presence, social media behavior, and mobile game behavior. The relationships will be examined quantitatively. The framework includes (i) a dependent variable to measure viewers' intentions to click the video ads, (ii) four independent variables including graphic performance, story attractiveness, gameplay attractiveness that evaluate features of video ads from different aspects, (iii) three moderating variables including preferred game genre, time spent on mobile games per week, and the number of frequently used social media networks, and (iv) two mediators, namely the perceived credibility of video ads and the extent of surprise felt by viewers.

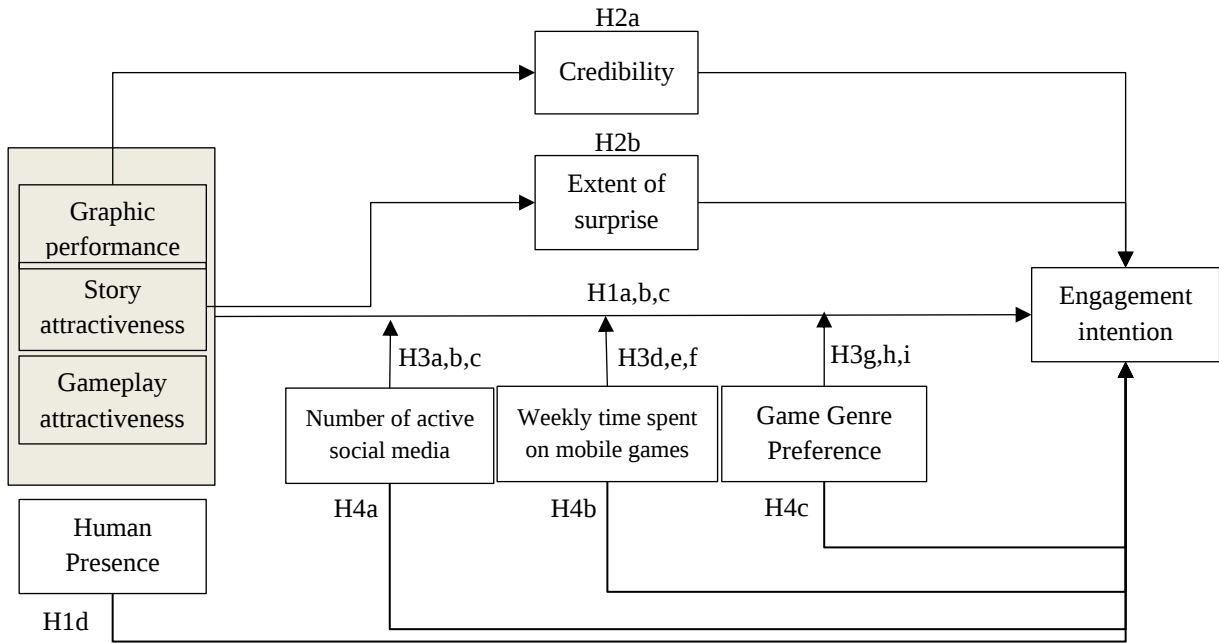


Figure 4: Visual representation of conceptual framework

2.2.1 Video Ads attributes and Engagement Intentions

As discussed previously, graphic performance including color, quality, aesthetic design, and visual imagery in an ad can affect the perception of ads viewers on the ads or the brand and increase purchase intentions (Chang and Lin, 2010; Labrecque and Mline, 2012; Mikhailitchenko et al. 2009; Robins and Holmes, 2008; Chen et al., 2017). But mobile games as intangible products are different from tangible ones that usually require upfront payments. The concept of purchase intention widely used in other literature does not necessarily apply in the context of mobile game because of the distinction between “download intentions” and “purchase intentions”. The advantages of storytelling video ads have been confirmed in multiple studies, with the former generating more positive attitudes toward the brand, word of mouth, and more motivation to share and promoting the product, and more views (COKER et al., 2017). They also make viewers imagine themselves in the scene of the story, increasing the likelihood that the ads are perceived as creative, touching, and meaningful (Kang et al., 2020). But the strength of the effect may vary in each game, where storytelling still plays a role in the whole experience of players when they play mobile games (Bormann and Greitemeyer, 2015). Gameplay of mobile games, which determines how a user interacts with other players or the game is also an important variable, since the product attribute belief affects the evaluation of the brand (Mitchell and Olson, 1981). In general, the study aims to test previous conclusions regarding video ad attributes, particularly under the mobile game context and to examine whether the conclusions apply to mobile game ads.

H1a: Viewers are more willing to engage with video ads of mobile games of high graphic quality than those of low quality.

H1b: Viewers are more willing to engage with video ads of mobile games with more attractive stories than those with less attractive stories.

H1c: Viewers are more willing to engage with video ads of mobile games with more attractive gameplay than those with less.

In terms of human presence in an ad, it is identified to improve attitudes toward ads due to the physical attraction of a spokesperson or personality reference made by the viewer (Caballero and Solomon, 1984; Brumbaugh, 1993). Therefore, this study targets on the comparison between ads with and without human presence to confirm previous findings that the presence of real humans in an ad improves their attitudes toward the product (Jin and Bolebruch, 2009). The authors hypothesize:

H1d: Viewers are more willing to engage with mobile games video ads with human presence than those without human presence.

2.2.2 Potential Mediators

A mediator variable seeks to identify and explain the mechanism or process that underlies an observed relationship between an independent variable and a dependent variable (MacKinnon, 2011). In this study, perceived content credibility and the extent of surprise are proposed mediators.

Ad credibility, defined by Lutz (1985), is the degree to which consumers perceive products or brands' claims shown in the ads. It refers to two types of credibility: content credibility and source credibility; content credibility represents the perceptions of what extent consumers perceive the messages of the ads to be believable, and source credibility represents to what extent they trust the source of the ads (Mackenzie and Lutz, 1986). Despite the finding in Smith et al (2014) research that exposure to around-game ads softened and weakened negative attitudes towards general ads, source credibility is perceived as low when the source's self-interest as one of the main determinants has been obviously perceived as high by consumers (Hautz et al., 2014). In this research, content credibility is presumed as the sole measurement of the credibility variable due to the low perceived source credibility. The graphic quality of video advertisement is a representation about the level of how one product or service has been communicated in the form of visual information. The previous study has shown the positive influence of the technical quality of online videos and ads videos on source credibility (Hautz et al., 2014; Chen et al., 2017). No research yet to examine whether technical quality of online videos would influence the perceived content credibility of viewers.

A common assumption from several studies is that ads credibility can influence consumer attitudes and behaviors, implying that credibility is positively associated with attitudes towards ads from customers and further affects the purchase intentions of them (Mackenzie and Lutz, 1986; Liu et al., 2018). Despite one study shows that the effect of ads credibility on brand attitudes and purchase intentions of customers was failed to be supported by data, the focus on brand-oriented and experience-oriented ads in this study implies other types of ads can show different results regarding the effect of ads credibility. Thus, we hypothesize:

H2a: Perceived content credibility has a mediating effect on the relationship between engagement intentions of viewers and the graphic performance of the ads.

Evoking emotions has not only been a natural psychological response but also been a marketing strategy when customers are shown video ads. Teixeira et al. (2012) applied the model of emotion regulation from Gross and Thomson (2007) and examined how emotions triggered by videos as stimulus can affect customers' engagement. Surprise, categorized as positive or negative emotion, is related to the feelings of curiosity, joy, wonder in response to certain unexpected outcomes (Frederickson, 1988). Kujur and Singh (2018) asserted that positive emotions generate influence on customers' engagement by creating a pleasant state of mind, while negative emotions increase customers' engagement as well by motivating

them to take actions to reduce emotional imbalance. Storytelling video ads have been proved to create an emotional connection more effectively between customers and a brand than straight-sell videos do (Coker et al., 2017).

Frijda (1986) stated that action tendencies are resulted from emotions and drive cognition and behavior; action tendencies further incite actions leading individuals to deal effectively with situations in the environment. Depending on various levels of emotion generated, action tendencies lead to varying degrees of engagement by any stimulus. Surprise as a neutral emotion is applied as one of the most powerful marketing tools. Brands leverage surprise strategies to level up customer loyalty and engagement among existing customers as well as potential customers. In the academia, Surprise strategies have also been widely evaluated and researched. For instance, on the one hand, Hutter and Hoffmann (2014) proved that surprise could enhance the attitudes of consumers toward ads. On the other hand, one fundamental argument is that surprise has the potential to elicit pleasant, unpleasant, or definite feelings different from most other emotions which only represent a particular “tone”. Another supportive assumption stated that attention is perceived as an essential ingredient of effective ads and a key aspect to help recognize and recall advertisement cues (Teixeira et al., 2012; Barnes, 2002). Based on both arguments, Teixeira et al. (2012) built the model of emotion in which joy and surprise stimulate individuals’ two major attention strategies (distraction and concentration) in response to videos as the stimulus, which caused individuals to produce two behavioral responses: approaching or avoiding; the result of their study shows that the level rather than the velocity of surprise brings more attention concentration. Thus, we hypothesize:

H2b: The extent of surprise has a mediating effect on the relationship between engagement intentions of viewers and story attractiveness.

2.2.3 Potential Moderators

A moderator variable is defined as one variable that systematically modifies either the form and/or strength of the relationship between a predictor and a criterion variable (Sharma et al., 1981). In this study, the authors propose three moderators: the number of used social media simultaneously, time spent on mobile games, and game genre preference.

Previous studies have been stressing the significance of social media in enhancing ads effectiveness by boosting digital communication through social networking sites. More attention should be paid to the fact that most present research have proved the role of social media to generate more involvement, connection, and purchasing intentions than most other ads except interstitials ads (DeVries et al., 2012; Chang et al., 2015; Kumar et al., 2016; Felix et al., 2017; Malthouse et al., 2013). These studies focused on how social media as an ad medium could influence ads effectiveness and engaged behaviors of customers from the marketing side, while few studies considered the use of social media as behavioral conditions to potentially impact the relationship between the perceived impressive elements of ads and the intention to engage from the customer side. Existing literature represents social media use by measuring engagement intensity on a single platform or comparing social media use among different platforms. The context of those studies lies in “media switching” where users switch directly from one social media to another without considering multiple alternatives. “Media switching” was highly aligned with the pre-Internet era. However, the multi-media environment is occurring when the constraints of social media use such as media access, lack of media literacy and excessive costs have been removed, leading users to change from “media switching” to “platform-swinging”. “Platform swinging” means users use multiple social media platforms instead of abandoning the older one and

switching to a new one. The motivation of “platform-swinging” lies in the different yet irreplaceable functions of each platform (Tandoc Jr et al., 2019). In this study, simultaneously using multiple social media platforms was included as one of the manifestations of social media use to be consistent with the status quo. Therefore, social media use is measured by the number of platforms used on a weekly basis instead of the frequency and intensity of using single platforms. In terms of the relationship between social media use and user personality (Correa et al., 2010; Liu and Campbell, 2017), the authors found that the more frequently users use social media, the more open they are presumed to experience. Dodoo and Padsovano (2020) confirmed that high level of openness to experience positively affects ads attitude and purchase intentions.

Therefore, we further suppose that the characteristics of novelty-seeking and curiosity may have an impact on the relationship between video ads elements and engagement intentions (click). Thus, we hypothesize:

H3a: The effect of gameplay on engagement intentions of viewers is greater for those who use more social media simultaneously than those who use fewer social media simultaneously.

H3b: The effect of storytelling on engagement intentions of viewers is greater for those who use more social media simultaneously than those who use fewer social media simultaneously.

H3c: The effect of graphic performance on engagement intentions of viewers is greater for those who use more social media simultaneously than those who use fewer social media simultaneously.

Extant research has investigated the drivers behind the behavior of mobile game players from the perspective of active participation and diversion. Wu et al. (2010) and Zhou et al. (2013) suggested that players’ perception of attributes such as improved flow experience, social influence, usage cost can be viewed as the catalyst of players’ proactive stickiness. Other researchers proposed that the intention to kill time and to create a distraction from other parts of life as well as the need for social interaction have a positive influence on players’ intentions to play. On the other hand, studies found some weak relationships between mobile game behavior and user identities such as age, gender, and playfulness (Kim, 2013; Barnett, 2012; McCauly et al., 2018). Remarkably, like social media use, mobile game behavior could be related to players’ personalities such as openness to experience as well (Seok and DaCosta, 2015); therefore, gaming behavior is also assumed to influence the effect of ads attributes on engage intention. In the research from Pappas et al. (2019), game developers were suggested to be aware of the necessity of considering user characteristics based on gameplay time. The authors concluded that the combination of price value, emotions, gender, game content quality and time spent on games may be necessary to raise the intention of consumers to download mobile games. Notably, a combinative effect of game content quality and mobile gameplay time on downloading behavior was proved in this study: when hard-core gamers have more positive perceptions of content quality of mobile games, they will show higher intentions to download this game. Despite that this study was conducted from game designing and development point of view, the influence of gameplay time could still be assumed to take effect potentially on downloading behavior in response to ads from the marketing perspective. Thus, we hypothesize:

H3d: The effect of gameplay on engagement intentions of viewers is greater for those who spend more time on mobile games than those who spend less.

H3e: The effect of storytelling on engagement intentions of viewers is greater for those who spend more time on mobile games than those who spend less.

H3f: The effect of graphic performance on engagement intentions of viewers is greater for those who spend more time on mobile games than those who spend less.

H3g: The effect of gameplay on engagement intentions of viewers is greater for those with more preferred game genres than those with fewer.

H3h: The effect of storytelling on engagement intentions of viewers is greater for those with more preferred game genres than those with fewer.

H3i: The effect of graphic performance on engagement intentions of viewers is greater for those with more preferred game genres than those with fewer.

Next to the moderating effects above, the direct relationships between engagement intentions and potential moderators are also relevant in the study. Thus, the authors hypothesize:

H4a: Viewers who use more social media simultaneously have higher engagement intentions than those who use less.

H4b: Viewers who spend more time on mobile games have higher engagement intentions than those who spend less.

H4c: Viewers who prefer more mobile game genres have higher engagement intentions than those who prefer fewer.

3. Methodology

The following chapter presents the methodology to investigate viewers' engagement intentions to mobile game video ads. The scientific approach, analytical tool, definition and recoding of variables, as well as data quality are discussed. During the entire process of the study, including the pilot study, the authors strictly follow the GDPR (General Data Protection Regulation).

3.1 Scientific Research Approach

The aim of this study is to build quantitative relationships between viewers' engagement intentions and video ad attributes for mobile game ads, instead of proposing a new theory and context. Thus, the authors adopt a paradigm of ontological naturalism and epistemological positivism to find correlations and describe the participants' behaviors and evaluations of video ads. The study adopts a deductive approach, from which research questions and hypotheses are generated and subject to empirical scrutiny (Bryman & Bell, 2011). In this context, the deduction approach is more relevant than induction or abduction approach to answer the research questions and build hypotheses. The data quality of the collected samples is examined, and then hypotheses are tested statistically.

The quantitative approach is adopted to test the hypotheses by conducting online questionnaires that are completed with the absence of the authors. Though respondent honesty cannot be fully guaranteed, a self-completion questionnaire is still the most common method in quantitative studies (Bryman & Bell, 2011). Four versions of questionnaires are distributed to different groups of respondents, all collecting background information including social media and gaming behavior. Two groups were presented with different mobile game video ads (a total eight videos of different mobile games were presented) evaluated with unified metrics, with the purpose to (i) reach a large sample size, especially during the time of COVID-19, and to (ii) diversify the ads content thus ensuring a greater generalizability of the findings. The results of four questionnaires are then aggregated and analyzed. But having four questionnaires with the same purpose requires a balanced response distribution, thus the sample size for each questionnaire is controlled at the same level.

3.1.1 Participants

The sampling and the research instrument follow the formulation of research questions. The authors chose self-completed questionnaires as the research instrument. The video advertising of mobile games in the research questions is based on the online setting and on participants who use social media so that they are approachable by video ads on social media. Then there is the need to sample participants from the massive social media users. To guarantee sufficient samples, it is important to keep the samples representative (Bryman & Bell, 2011). 400 participants answered in the questionnaires which have four versions with two selected videos displayed in each to show various levels of attributes. Therefore, the participants were assigned to one of the four groups, giving each version 100 respondents for generalizability (Bryman & Bell, 2011).

The gender distribution of the samples was 45.9 percent female, 53.8 percent male with the rest remained anonymous. The age ranged between 16 and 62 years old with an average age of 19 years old. According to figure 5 and figure 6, 64.9 percent of participants chose more than three genres of mobile games and 59.4 percent have been using more than three social media platforms at least three times a week.

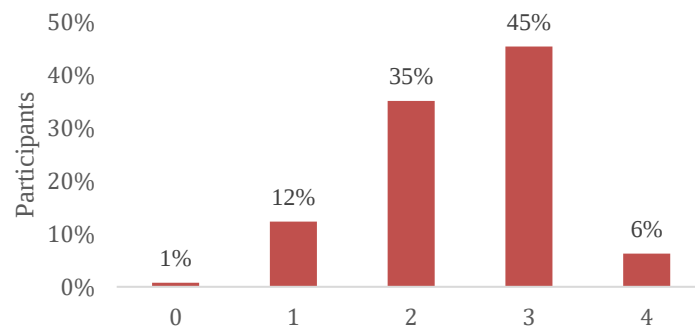


Figure 5: Participants across numbers of preferred genres

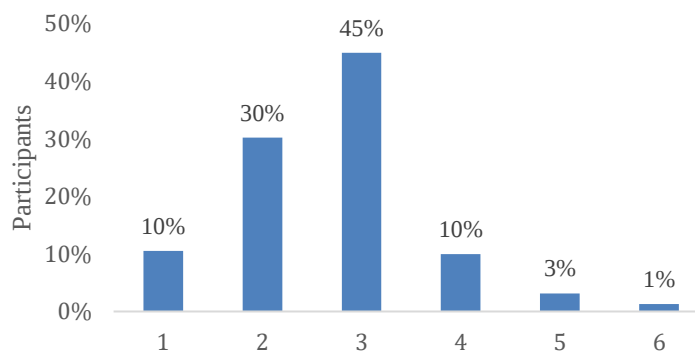


Figure 6: Participants across numbers of actively used social media platforms on a weekly basis

3.1.2 Design

The questionnaire was designed and conducted as self-completed questionnaires in a laboratory experiment since it occurred online rather than in a field-experiment real context (Bryman & Bell, 2011). Although the online context might cause concerns over the fidelity of the results, it is still a very natural context where social media users receive interstitial ads of mobile games and decide whether to click the link of download.

To make the questionnaire more reader friendly and have a higher response rate, Chinese was chosen to be the questionnaire language based on the language background of the users. Since self-completed questionnaires entail no interviewers, questions were simplified and shortened to avoid barriers in understanding and fatigue (Bryman & Bell, 2011).

The questionnaire contained structured and closed questions, most of which are followed by answers measured on a seven-point Likert scale. As many of these questions were used to measure the perceived level of certain video attributes, interval scales can represent the range between two extremes (Söderlund, 2005).

Each of the four versions includes two ad videos, as discussed in the methodology chapter above. The questionnaire consists of two modules following the introductory text. The first module contained ten questions with the aim to (i) filter out random participants who do not play or have no intentions to play mobile games; (ii) collect basic demographic information of participants regarding age, gender, game preference, and individual potential motivations behind mobile game playing; (iii) collect data of social media behaviors and mobile game behaviors and categorize them into different groups by asking the amount of frequently used social media platforms on a weekly basis, and the frequency of mobile games playing in the past month.

The second module has been displayed with two different video ads. Each video is followed by a few questions. Participants were aware that they would be directed to the download page if they click the video. The questions were given to the participants in three steps starting from asking the engagement intention, to know how motivated one is before actually clicking the video and downloading the game. In the next step, respondents were asked to rate from 1 to 7 the extent of each attribute displayed. Graphics, as the first attribute, was measured by how well the video ad conveyed information through visual imagery. The comment “Very bad” and “Very nice” were respectively placed on the left and right of the scale. Storytelling, as the second attribute, was measured by respondents on how much the narrative has caught their attention. The two comments “Very boring” and “Very interesting” were respectively placed on the left and right extreme of the scale. Gameplay, as the third attribute, was measured by the previewed attractiveness of the mobile game in terms of interactions with other players. The comment “Not attractive at all” and “Very attractive” were placed on the left and right extreme, respectively. The fourth attribute- presence of real humans was not measured by any question since it is an objective variable already represented in the videos. For step three, three comments were provided for respondents to choose regarding the perceived content credibility, the extent of surprise, and the extent of attractiveness each video possessed. The corresponding answers were also calibrated on a seven-point Likert scale from “Strongly disagree” to “Strongly agree”.

Our hypothesis and questionnaires were designed based on the following four dimensions:

- (i) To learn how engagement intentions differ among the different mobile game genres, the questions to probe the game genres participants preferred and their engagement intention after the ads would be presented.
- (ii) To examine the relationship between engagement intentions and features of social media use and mobile game behaviors of different participants. The question regarding the number of social media being frequently used every week was to measure social media use; the question regarding hours spent on mobile games in the past month would be the first measurement of mobile game behaviors and the question regarding the number of genres participants like to play would be the second measurement.

(iii) To examine the relationship between engagement intentions and self-assessed ads attributes, questions including “How does the video look?”, “How interesting is the storytelling?”, and “How attractive is the gameplay?” would be asked to measure graphic performance, story attractiveness and gameplay attractiveness.

(iv) To examine the moderating effect on the relationship between self-assessed ads attributes and engagement intentions, measurements would be mentioned in (ii) and (iii).

3.1.3 Materials

The stimuli in the study are 8 videos collected from Facebook Ads Library. The selection of video ads followed the following standards: (i) high genre diversity, (ii) diverse graphic performance, (iii) diverse story themes, (iv) the presence and absence of real humans, (v) low English text and voice-over intensity, (vi) diverse geographic locations of publisher and (vii) different level of games popularity in China. The selected video ads covered all four genres of video games and predicted graphic performance from low to high. Six videos had unique story themes while two had no storytelling and ads with and without the presence of real humans. 7 videos are considered to have few English texts and voice-overs, making them comprehensible to Chinese who do not speak English. Besides, the video ads selected come from four genres published by games companies in China, Cyprus, Denmark, Russia, Sweden, and the United States, thus the findings and conclusions can be drawn with insignificant geographic limitations in terms of the nationality of mobile game publishers. The popularity for each game varies from low to high. However, such variations cannot be evenly captured in the eight videos due to practical limitations such as the limited availability of videos on Facebook. Appendix 1 summarizes the criteria for video ads selection and readers can watch the ads with the URLs provided in Appendix 2.

Since video ads running on Facebook for mobile games were selected and shown to participants, the authors were not able to isolate or manipulate the attributes and thus cannot guarantee zero interactions between these video ad attributes. However, the selection in this experimental study makes the ads more authentic and engages participants in the assumed environment.

3.1.4 Procedure

The four versions of the questionnaire were designed on wenjuan.com and distributed on the most popular social media platform WeChat which supports open questionnaire distribution. Appendix 3 shows the translated sample of the questionnaires in English. The period of data collection was from March 13th to 27th, 2021. There could be overlapping samples in the data collection because one participant might have taken at least two versions of the questionnaire, which reduces our real sample numbers. Therefore, to reduce the rate of overlap, we presented a reminder in the introduction to suggest participants who have taken one version of the questionnaire not to take other versions. It should be noted that the number of potential overlapping samples could be reduced but not eliminated.

3.1.5 Measurement

To measure the three video ad attributes, respondents were asked “How the video looks”, “How interesting the storytelling is”, and “How attractive the gameplay is”, and a seven-point Likert scale from 1 to 7 was provided to respondents to select one of the points. Content credibility and the extent of surprise were measured with questions if respondents agreed with the statements “The video accurately represents the content of the game” and “I’m surprised by the contents in the video”, respectively. Seven-point Likert scales were also provided to the respondents for these two questions.

Game genre preference was measured with the question “Which of the following genres of games do you like to play (choose all options that apply)”, and respondents were allowed to choose at least one option from “Simulation (The Sims, Need for Speed, Pokémon GO, etc.)”, “Strategy (Warcraft, Hearthstone, Clash of Clans, etc.)”, “Action (Super Mario, Half-Life, Tekken, etc.)”, “Role-playing (World of Warcraft, The Witcher, Fallout, etc.)”, “Others”, and “I don't like playing video games”, which cannot be selected with other options. The number of selected options for each respondent were aggregated and analyzed. Similarly, the number of social media simultaneously used was measured with the question “Which of the following apps do you use at least 3 times every week (Choose all options that apply)”, and options are “WeChat”, “Weibo”, “QQ”, “Douyin”, “Kuaishou”, “Bilibili” and “None of above”, which cannot be selected with other options. The number of selected options were analyzed. Weekly time spent on mobile game was measured with the question “How many hours per week have you spent on mobile games on average over the past month”, and respondents were required to typewrite the number. Human presence was not included in the questionnaires of the study since whether a video ad has human presence was known to the authors. Table 2 summarizes the corresponding hypotheses, questions and format of responses for each variable in the conceptual framework.

Variable category	Variable	Corresponding Hypothesis	Format of response
Dependent variable	Engagement intention	All	Single choice on one of Likert scales from point 1 to point 7
Independent variable	Graphic performance	H1a	Single choice on one of Likert scales from point 1 to point 7
	Story attractiveness	H1b	
	Gameplay attractiveness	H1c	
	Human presence	H1d	Pre-determined binary variable, not included in the questionnaires
Mediator	Content credibility	H2a	Single choice on one of Likert scales from point 1 to point 7
	Extent of surprise	H2b	
Moderator	Number of social media simultaneously used	H3a	Multiple choices on different Chinese social media platforms
		H3b	
		H3c	
		H4a	
	Game genre preference	H3d	Multiple choices on different video games genres
		H3e	
		H3f	
		H4c	
	Weekly time spent on mobile games	H3g	Typewrite the number of hours spent on mobile games in the recent month
		H3h	
		H3i	
		H4b	

Table 2: Variable information

3.1.6 Analysis

The data was processed and analyzed by IBM SPSS Statistics 26, which is a common tool in statistical analysis and can calculate Cronbach's alpha and conduct regression analysis and hypothesis tests. The data processing includes: (i) merging results from four questionnaires into one table, (ii) filtering out unqualified answers, and (iii) recoding variables for further analysis.

Unqualified answers were filtered out to ensure the quality of data based on following criteria: (i) ages over 60 or below 10 (5 samples were filtered out) and (ii) zero mobile game experience (14 samples were filtered out), leaving 381 participants' data to be analyzed.

The recoding of social media usage and preferred game genre was realized by transforming the selected items to the number of selected items, indicating the number of social media or game genres participants use or prefer.

Other variables were kept unchanged as in the answers submitted, and outliers of year of birth were filtered out by setting the values of outliers to NA while keeping other records unchanged. Table 2 presents detailed information about the variables.

The authors used simple or multivariate linear regressions to test hypotheses regarding direct relationships between variables accordingly. To test the mediating effect, the authors adopted the approach proposed by Baron and Kenny (1986) that requires construction of multiple linear regressions and the examination of significance of coefficients. The moderation test followed the approach of Cohen (2013), where an interaction term of the independent variable and moderators is included in linear regression.

3.2 Data Quality

In this section, the data quality of this study is examined and discussed in terms of measurement reliability, validity, and replicability (Bryman & Bell, 2011).

3.2.1 Reliability

Stability

Stability helps to evaluate whether a measure is stable and varies over time within contextual conditions (Bryman & Bell, 2011). A higher level of stability indicates that the response to the second questionnaire would be like the first one should the questionnaire is to be performed to the same sample without any contextual changes again. Evaluations for video ad attributes from viewers are stable within a long period of time since preference stability is high especially when consumers need to make a choice (Hoeffler & Ariely, 1999). However, the decision of whether to click the link and engage with the video ads may vary because of changes of emotional status or contextual settings. The authors were not fully aware of the measures for engagement intentions for online video ads, as suggested by Calder et al. (2009), due to the lack of research in the field. Thus, previously used measures were not adopted in the study.

Internal Reliability

Internal reliability evaluates whether the items within a multi-item scale are consistent with measuring the same intended variable (Bryman & Bell, 2011), such as content credibility and the extent of surprise. Cronbach's Alpha is used to measure internal reliability, and alphas over 0.70 indicate a high internal

reliability (Westergaard et al., 1989). All alphas grouped by four video sets are greater than 0.7, indicating a high internal reliability and the alpha of all variables combined is 0.86. Table 3 in the Results and Analysis chapter shows Cronbach's Alphas of the variables in the study.

Inter-observer consistency

Inter-observer consistency addresses observers' subjective attributes during the data recording process (Bryman & Bell, 2011). However, this study does not involve observers during the whole time, meaning that behaviors of participants are not significantly affected by observers, thus the inter-observer consistency can be achieved.

3.2.2 Validity

Validity is the extent to which any measuring method measures what it is intended to measure (Carmines & Zeller, 1979). Four constructs are used to evaluate the validity of the study: (i) measurement validity, (ii) internal validity, (iii) external validity, and (iv) ecological validity.

Measurement Validity

Measurement validity accesses if the observations capture the concept to be measured (Adcock & Collier, 2001). To ensure the measurement validity, the study measured engagement intentions asking respondent to report their clicking intentions, since clicking is the only engagement available to viewers, meaning that clicking intention is the engagement intention in the video ad context. In addition, video ad attributes except human presence, gaming behaviors, social media behaviors, content credibility, and the extent of surprise were all measured in the self-reported manner, and the questions were clearly structured, asking for the scored evaluation for each variable. The measures of social media behavior and game behavior are limited to the most recent month from the time respondents received the questionnaires, and the motivation is to exclude the influence from churned players in the later analysis. Definitions of each measurement are also clearly provided to respondents to ensure consistency. However, such measures were not used in previous studies, leaving the measurement validity of the current measures to be further validated.

Internal Validity

Internal validity examines whether the variation of the dependent variable is caused by the independent variables, rather than the other way around (Saunders et al., 2009, Bryman & Bell, 2011). In this study, internal validity is high, due to a clear sequence of actions: viewers needed to watch and evaluate the video ads first. Then they decided whether to engage with the video ads. In addition, viewers did not know the game presented beforehand, so that they would not make decisions before watching the ads. Thus, the engagement intentions cannot explain the evaluation of the viewers.

External Validity

External validity examines the generalizability of the study, i.e., it evaluates if the findings of the study can be applied to a larger population (Saunders et al., 2009, Bryman & Bell, 2011). To this end, the authors invited participants from various backgrounds of mobile gaming and social media usage to better simulate the real-world situation.

Ecological validity

Ecological validity discusses the applicability of the findings in a study to real-life and social settings (Bryman & Bell, 2011). Since the questionnaires were completed on computers or mobile phones, the

setting of the questionnaires resembled the experience of receiving video ads on social media networks. In addition, the questions of the questionnaire did not require sensitive personal information, with the answers being fully anonymous, and no potential rewards or penalties based on the content of the answers. Therefore, participants had no motivations to be dishonest. However, conducting questionnaires to collect data has limited the ecological validity of the study, since they cannot fully capture the behaviors and thoughts of the audience in a natural environment. To address the issue, the authors encouraged participants to imagine that they were watching real-world mobile game video ads on social media. Besides, since all the ads selected were from Facebook, which is not accessible in China, the language and the models in the ads might be different from actual Chinese video ads. The authors tried to select clips that required a minimal capacity for English of viewers by sorting out ads with few English texts and voice-over. 7 out of 8 selected ads have low English intensity, with only one exception that has human presence and verbal introduction to the game in the ad.

3.2.3 Replicability

Replicability refers to the process of replicating a study to support or disprove the findings in the original study (Bryman & Bell, 2011). To achieve a high level of replicability, the authors documented the processing and analysis of the data to facilitate scholars who want to conduct the same study to follow the steps in the paper. Besides, the definitions of the measures are clear and precise, to avoid misunderstandings of the measures used in the study. Thus, the authors argue that the replicability of the study is sufficient.

4. Results and Analysis

In this chapter, the authors present the descriptive results of the study. Regressions and hypothesis testing will be given afterwards.

4.1 Internal Reliability

As discussed in the Methodology chapter, the internal reliability is high across variables, all Cronbach's alphas were greater than 0.7, implying a high internal reliability. Table 3 presents the results of Cronbach's alphas.

Variable Category	Video Set	Variable Name	CITC	Cronbach's α
Video Attributes	1	Graphic performance	0.798	0.899
		Story attractiveness	0.838	
		Gameplay attractiveness	0.771	
	2	Graphic performance	0.764	0.876
		Story attractiveness	0.774	
		Gameplay attractiveness	0.744	
General Evaluation	1	Credibility	0.596	0.801
		Extent of surprise	0.7	
		Overall evaluation	0.648	
	2	Credibility	0.531	0.778
		Extent of surprise	0.615	
		Overall evaluation	0.704	
All Combined				0.86

Table 3: Cronbach's Alphas

4.2 Descriptive Results

According to the Table 4, among the 381 participants, the average age is around 28 years old ranging from 16 to 62 years old. Participants have started to play mobile games for 2.6 years on average. The maximum time spent by participants on game playing is four years while one year being the minimum. Participants have spent on average 15 hours playing mobile games in the past month, with 40 hours being the maximum.

	Minimum	Maximum	Average	Median	Standard Deviation
Age	16	62	28.462	27	6.739
Years of experiencing playing mobile games	1	4	2.604	2	1.291
Weekly time spent on mobile games in the last month	0	40	15.036	14	10.793

Table 4: Descriptive statistics

From Table 5, when asked whether they had watched video ads for mobile games, 89.2 percent said yes. It shows that among these people, nearly 36 percent remembered to have downloaded mobile games after watching the video ads. According to Figure 7, participants who preferred playing action mobile games have shown the highest engagement intentions on average while participants who preferred role-playing mobile games showed the lowest.

	Yes	No	Can't remember
Have watched video ads of mobile games	89.2%	10.8%	0
Have downloaded a mobile game via its ad	35.7%	41.7%	22.6%

Table 5: Experience of video ad and subsequent download of mobile games

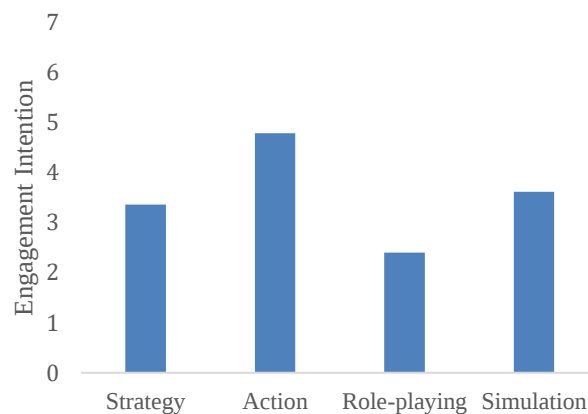


Figure 7: Average engagement intentions for each genre of games

When asked the importance of factors including gameplay, storytelling, popularity, etc. for their decision to download a game, participants rated each factor using the 7-point Likert scale, which is shown in the Figure 8. 55 percent of the respondents rated the importance of having fun with friends in a mobile game with 6 or 7 points, implying that on average interacting with friends in the game is quite an essential factor for their game selections ($M=5.22$, $SD=1.85$). Another significant factor is gameplay, which got 6 or 7 points by 52 percent of the participants ($M=5.12$, $SD=1.53$). Game storytelling was viewed as one moderately important factor when deciding whether to download a mobile game or not. Forty-eight percent of the participants gave it 4 or 5 points and 34 percent of participants gave it higher scores, standing at 6 or 7 ($M=4.75$, $SD=1.48$). Like the storytelling, 50 percent of the participants rated 4 or 5 points for graphic performance, while 34 percent rated 6 or 7 points ($M=4.43$, $SD=1.50$). When it comes to recommendations of friends, the perceived importance of it presented a dispersed assessment ($M=4.03$, $SD=1.89$). Popularity of the mobile game was perceived as moderately important with the rating of 4 points ($M=4.34$, $SD=1.83$).

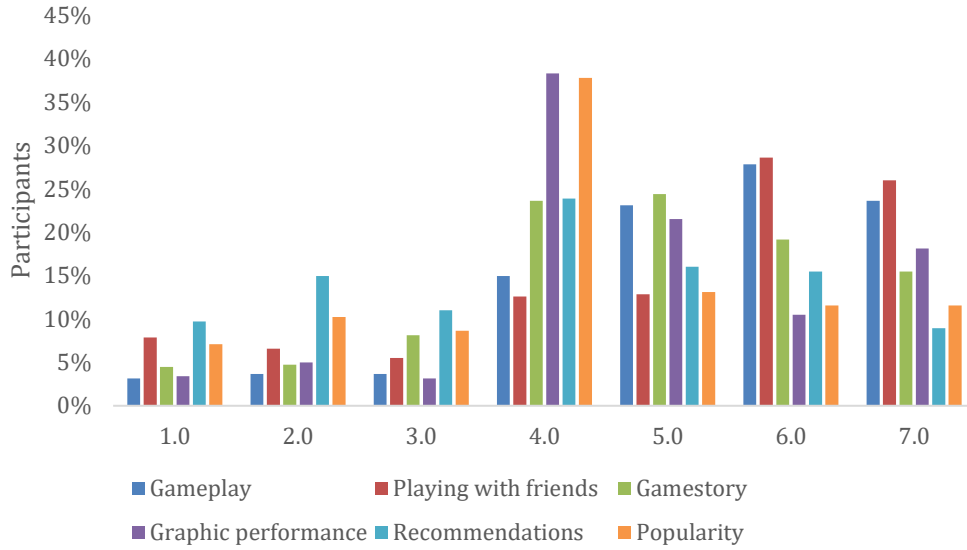


Figure 8: Importance levels of mobile game characteristics

4.3 Game Genres and Engagement intentions

The variation of engagement intentions for each genre can be revealed by regressions of each genre group. Table 6 summarizes the differences among genres and engagement intentions, and Figure 9 compares the coefficients across genres.

Genre	n	Variable	Beta	t	p	R ²	Adjusted R ²	F
Strategy	174	Intercept	0.112	0.606	0.545	0.688	0.683	F(3,170)= 125.205 P<0.01
		x1	0.23	3.945	<0.01			
		x2	0.268	4.171	<0.01			
		x3	0.39	6.307	<0.01			
Action	206	Intercept	0.745	2.156	0.032	0.428	0.42	F(3,202)= 50.388 P<0.01
		x1	0.214	2.82	<0.01			
		x2	0.358	4.166	<0.01			
		x3	0.257	3.422	<0.01			
Role-playing	101	Intercept	0.533	2.127	0.036	0.453	0.436	F(3,97)= 26.766 P<0.01
		x1	0.091	0.876	0.383			
		x2	0.237	2.25	0.027			
		x3	0.422	4.531	<0.01			
Simulation	280	Intercept	1.421	7.116	<0.01	0.331	0.324	F(3,276)= 45.545 P<0.01
		x1	0.236	3.113	<0.01			
		x2	0.159	2.154	0.032			
		x3	0.179	2.661	<0.01			

y = engagement intentions

x₁ = graphic performance

x₂ = story attractiveness

x₃ = gameplay attractiveness

Table 6: Linear models for each game genre

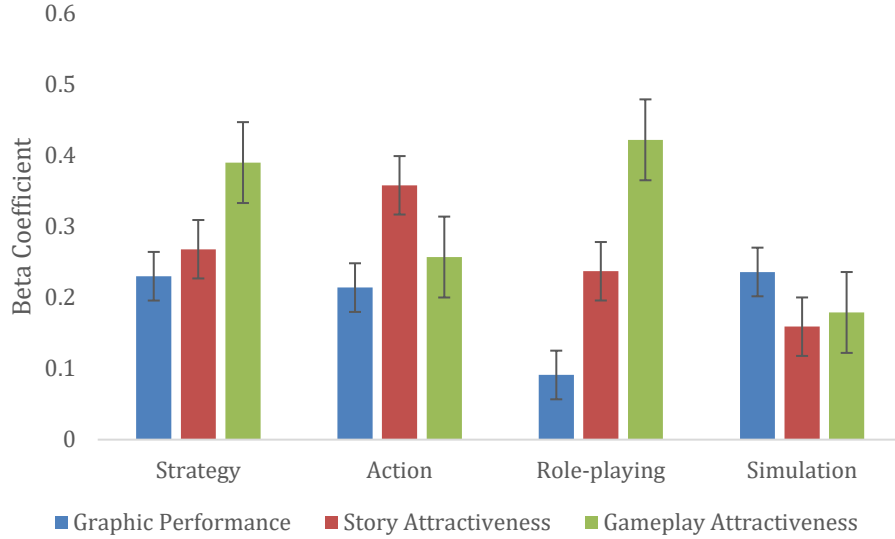


Figure 9: Coefficient comparison across game genre

The coefficient of graphic performance is the greatest in simulation games, while story attractiveness has a larger impact in action games. Gameplay plays a more significant role in both strategy and role-playing genres. On average, simulation genre has lower coefficients than other three genres, suggesting that such three attributes exert less impact on engagement intentions than on other genres. In contrast, the three attributes in the strategy genre have greater impact than in action, role-playing and simulation genres.

4.4 Hypothesis Testing

The hypothesis testing is developed following the model introduced in the conceptual framework. Statistical measures used for the testing include linear regression, mediating effect testing and moderating effect testing. In order to test the hypotheses regarding the relationships between engagement intention and independent variables & moderators, and predict the engagement intention given the value of variables for other mobile game video ads, regression analysis is preferred.

4.4.1 Direct Relationship between Engagement Intentions and Video Ad Attributes

By running a linear regression between engagement intentions and the three video ad attributes, the direct relationship is supported. The linear model is as follows:

$$y = 0.183 + 0.245x_1 + 0.282x_2 + 0.377x_3$$

In which

y = engagement intentions,

x_1 = graphic performance,

x_2 = story attractiveness, and

x_3 = gameplay attractiveness.

Table 7 summarizes the statistics of the linear relationship:

<i>n=381</i>							
	<i>Beta</i>	<i>t</i>	<i>p</i>	<i>SD</i>	<i>R</i> ²	<i>Adjusted R</i> ²	<i>F</i>
<i>Intercept</i>	0.183	1.178	0.24	0.155			
<i>x</i> ₁	0.245	4.617	<0.01	0.053	0.623	0.62	<i>F</i> (3,377)=207.886, <i>p</i> <0.01
<i>x</i> ₂	0.282	4.534	<0.01	0.062			
<i>x</i> ₃	0.377	7.069	<0.01	0.053			

Table 7: Linear model for H1

The coefficient for graphic performance is 0.245 (SD=0.053, *t*=4.617, *p*<0.01, 95% CI (0.141, 0.349)), indicating a significantly positive relationship between engagement intentions and graphic performance. H1a is supported.

The coefficient for story attractiveness is 0.282 (SD=0.062, *t*=4.534, *p*<0.01, 95% CI (0.16, 0.404)), indicating a significantly positive relationship between engagement intentions and story attractiveness. H1b is supported.

The coefficient for gameplay attractiveness is 0.377 (SD=0.053, *t*=7.069, *p*<0.01, 95% CI (0.273,0.482)), indicating a significantly positive relationship between engagement intentions and gameplay attractiveness. H1c is supported.

All three attributes have a positive *beta* in the model, underlying the assumption that ads of higher quality are more attractive to viewers. In particular, gameplay attractiveness has the greatest value of *beta*, suggesting that gameplay is the main contributor to engage the viewers with the ads.

To determine whether the coefficients are significantly different from each other, 95 percent confidence interval is presented in Table 8. The results show that the coefficients for the three independent variables are not significantly different since the confidence intervals overlap each other.

<i>Variable</i>	<i>Beta</i>	<i>95% CI</i>
Graphic performance	0.245	(0.141,0.349)
Story attractiveness	0.282	(0.16,0.404)
Gameplay attractiveness	0.377	(0.273,0.482)

Table 8: 95% Confidence Interval of Coefficients

To test the effect of human presence, two separate linear regressions were conducted for video ads with and without human presence, respectively. For ads without human presence, the linear model is as follows:

$$y = 1.505 + 0.536x$$

In which

y = engagement intentions, and

x = average value of graphic performance, story attractiveness and gameplay attractiveness.

Table 9 summarizes the statistics of the linear relationship:

<i>n</i> =556	<i>Beta</i>	<i>t</i>	<i>p</i>	<i>SD</i>	<i>R</i> ²	<i>Adjusted R</i> ²	<i>F</i>
<i>Intercept</i>	1.505	10.855	<0.01	0.139	0.314	0.312	<i>F</i> (1,554)=253.031, <i>p</i> <0.01
<i>x</i>	0.536	15.907	<0.01	0.034			

Table 9: Linear model 1 for H1d

For ads with human presence, the linear model is as follows and summarized by Table 10:

$$y = 2.118 + 0.508x$$

In which

y = engagement intentions, and

x = average score of graphic performance, story attractiveness and gameplay attractiveness.

<i>n</i> =206	<i>Beta</i>	<i>t</i>	<i>p</i>	<i>SD</i>	<i>R</i> ²	<i>Adjusted R</i> ²	<i>F</i>
<i>Intercept</i>	2.118	7.54	<0.01	0.281	0.262	0.259	<i>F</i> (1,204)=72.572, <i>p</i> <0.01
	0.508	8.519	<0.01	0.06			

Table 10: Linear model 2 for H1d

Both Table 9 and 10 suggest a positive relationship between engagement intentions and the average score for the other three video attributes. Although *beta* in Table 9 is larger than that in Table 10, the intercept coefficient is substantially greater in Table 9. Given that the maximum of the average score does not exceed 7, the engagement intentions for ads with human presence would always be greater than for ads without human presence. Thus, H5 is supported. But the greater value of coefficient of *x* in the Table 25 indicates that the effect of improvement of graphic performance, story and gameplay attractiveness is greater, making audiences more sensitive to the improvement.

4.4.2 Mediating Effect

To test the mediating effects of H2a and H2b, the authors followed Hayes approach, in which three linear models are established, and then the direct effect and indirect effect are analyzed (Hayes, 2017).

The overall mediating effect of perceived content credibility on the relationship between engagement intention and graphic performance, was tested with 3 models developed, as shown in Table 11. A complementary mediating effect was found, as suggested by Table 12. Thus, H2a is supported.

<i>n</i> =381									
	<i>y~x</i>			<i>m~x</i>			<i>y~x + m</i>		
	<i>Beta</i>	<i>t</i>	<i>p</i>	<i>Beta</i>	<i>t</i>	<i>p</i>	<i>Beta</i>	<i>t</i>	<i>p</i>
<i>Intercept</i>	1.591	6.813	<0.01	2.314	13.041	<0.01	1.007	3.645	<0.01
<i>x</i>	0.524	9.415	<0.01	0.486	11.483	<0.01	0.401	6.322	<0.01
<i>m</i>							0.252	3.799	<0.01
<i>R</i> ²	0.19			0.258			0.219		
<i>Adjusted R</i> ²	0.187			0.256			0.215		
<i>F</i>	<i>F</i> (1,379)=88.641			<i>F</i> (1,379)=131.871			<i>F</i> (2,378)=53.108		
	<i>p</i> <0.01			<i>p</i> <0.01			<i>p</i> <0.01		

x = graphic performance

m = perceived content credibility

y = engagement intentions

Table 11: Linear models for H2a

<i>c</i> Direct effect	<i>a</i>	<i>b</i>	<i>a*b</i>	<i>a*b</i> 95% BootCI	<i>c'</i>	Conclusion
0.524**	0.486**	0.252**	0.123	(0.044,0.163)	0.401**	Complementary mediation
<i>a</i> : coefficient for <i>x</i> in $m \sim x$ <i>b</i> : coefficient for <i>m</i> in $y \sim x + m$ <i>c</i> : coefficient for <i>x</i> in $y \sim x$ <i>c'</i> : coefficient for <i>x</i> in $y \sim x + m$						

Table 12: Summary of the mediating effect testing for H2a

The mediating effect of the extent of surprise on the relationship between engagement intentions and story attractiveness of all videos was tested, as is shown in Table 13 and 14. H2b is not supported.

n=381									
	y~x			m~x			y~x + m		
	Beta	t	p	Beta	t	p	Beta	t	p
Intercept	1.613	6.871	<0.01	1.395	8.134	<0.01	1.42	5.605	<0.01
x	0.539	9.266	<0.01	0.62	14.567	<0.01	0.454	6.267	<0.01
m							0.138	1.97	0.05
R ²	0.185			0.359			0.193		
Adjusted R ²	0.183			0.357			0.189		
F	F (1,379)=85.862			F (1,379)=212.202			F (2,378)=45.198		
	p<0.01			p<0.01			p<0.01		
x = story attractiveness									
m = extent of surprise									
y = engagement intentions									

Table 13: Linear models for H2b

<i>c</i> Direct effect	<i>a</i>	<i>b</i>	<i>a*b</i>	<i>a*b</i> 95% BootCI	<i>c'</i>	Conclusion
0.539**	0.62**	0.138*	0.085	(-0.003, 0.141)	0.454**	No mediation
<i>a</i> : coefficient for <i>x</i> in $m \sim x$ <i>b</i> : coefficient for <i>m</i> in $y \sim x + m$ <i>c</i> : coefficient for <i>x</i> in $y \sim x$ <i>c'</i> : coefficient for <i>x</i> in $y \sim x + m$						

Table 14: Summary of the mediating effect testing for H2b

The mediating effect of content credibility and the extent of surprise is supported, and the results reveal that part of the effect of graphic performance and story attractiveness on engagement intentions is fulfilled by perceived content credibility and the extent of surprise, respectively.

4.4.3 Moderating Effect

The p-value of beta for the interaction term between independent variables and moderators is used to test the moderating effect. The moderating effect of the number of active social media used at one time

on the relationship between engagement intentions and gameplay attractiveness is not significant ($t=1.068$, $p=0.286>0.05$), as suggested in Table 15. H3a is not supported.

<i>n=381</i>									
	<i>y~x</i>			<i>m~x</i>			<i>y~x + m + x * m</i>		
	<i>Beta</i>	<i>t</i>	<i>p</i>	<i>Beta</i>	<i>t</i>	<i>p</i>	<i>Beta</i>	<i>t</i>	<i>p</i>
<i>Intercept</i>	3.656	45.447	<0.01	3.656	45.513	<0.01	3.657	45.529	<0.01
<i>x</i>	0.554	9.127	<0.01	0.554	9.151	<0.01	0.549	9.041	<0.01
<i>m</i>				0.127	1.452	0.147	0.13	1.49	0.137
<i>x * m</i>							0.071	1.068	0.286
<i>R</i> ²	0.18			0.185			0.187		
<i>Adjusted R</i> ²	0.178			0.18			0.181		
<i>F</i>	<i>F</i> (1,379)=83.299			<i>F</i> (2,378)=42.825			<i>F</i> (3,377)=28.941		
	<i>p</i> <0.01			<i>p</i> <0.01			<i>p</i> <0.01		

x = gameplay attractiveness

m = number of active social media used simultaneously

y = engagement intentions

Table 15: Linear models for H3a

Table 16 implies that the moderating effect of the number of simultaneously used active social media platforms simultaneously on the relationship between engagement intentions and story attractiveness is not significant ($t=0.606$, $p=0.545>0.05$). H3b is not supported.

<i>n=381</i>									
	<i>y~x</i>			<i>m~x</i>			<i>y~x + m + x * m</i>		
	<i>Beta</i>	<i>t</i>	<i>p</i>	<i>Beta</i>	<i>t</i>	<i>p</i>	<i>Beta</i>	<i>t</i>	<i>p</i>
<i>Intercept</i>	3.656	45.573	<0.01	3.656	45.677	<0.01	3.658	45.637	<0.01
<i>x</i>	0.539	9.266	<0.01	0.542	9.331	<0.01	0.538	9.19	<0.01
<i>m</i>				0.144	1.656	0.099	0.145	1.671	0.096
<i>x * m</i>							0.04	0.606	0.545
<i>R</i> ²	0.185			0.191			0.191		
<i>Adjusted R</i> ²	0.183			0.186			0.185		
<i>F</i>	<i>F</i> (1,379)=85.862			<i>F</i> (2,378)=44.499			<i>F</i> (3,377)=29.739		
	<i>p</i> <0.01			<i>p</i> <0.01			<i>p</i> <0.01		

x = story attractiveness

m = number of active social media used simultaneously

y = engagement intentions

Table 16: Linear models for H3b

The moderating effect of the number of active social media used at one time on the relationship between engagement intentions and graphic performance is found significant ($t=2.244$, $p=0.025<0.05$), as presented in Table 17. Viewers who are active on more social media (above average) are more sensitive to the graphic performance of the ads. Figure 10 presents the different effects of the number of active social media used simultaneously. H3c is supported.

<i>n</i> =381									
	<i>y</i> ~ <i>x</i>			<i>m</i> ~ <i>x</i>			<i>y</i> ~ <i>x</i> + <i>m</i> + <i>x</i> * <i>m</i>		
	<i>Beta</i>	<i>t</i>	<i>p</i>	<i>Beta</i>	<i>t</i>	<i>p</i>	<i>Beta</i>	<i>t</i>	<i>p</i>
<i>Intercept</i>	3.656	45.709	<0.01	3.656	45.817	<0.01	3.662	46.11	<0.01
<i>x</i>	0.524	9.415	<0.01	0.527	9.482	<0.01	0.524	9.489	<0.01
<i>m</i>				0.145	1.672	0.095	0.154	1.786	0.075
<i>x</i> * <i>m</i>							0.148	2.244	0.025
<i>R</i> ²	0.19			0.196			0.206		
<i>Adjusted R</i> ²	0.187			0.191			0.2		
<i>F</i>	<i>F</i> (1,379)=88.641			<i>F</i> (2,378)=45.929			<i>F</i> (3,377)=32.625		
	<i>p</i> <0.01			<i>p</i> <0.01			<i>p</i> <0.01		

x = graphic performance

m = number of active social media used simultaneously

y = engagement intentions

Table 17: Linear models for H3c

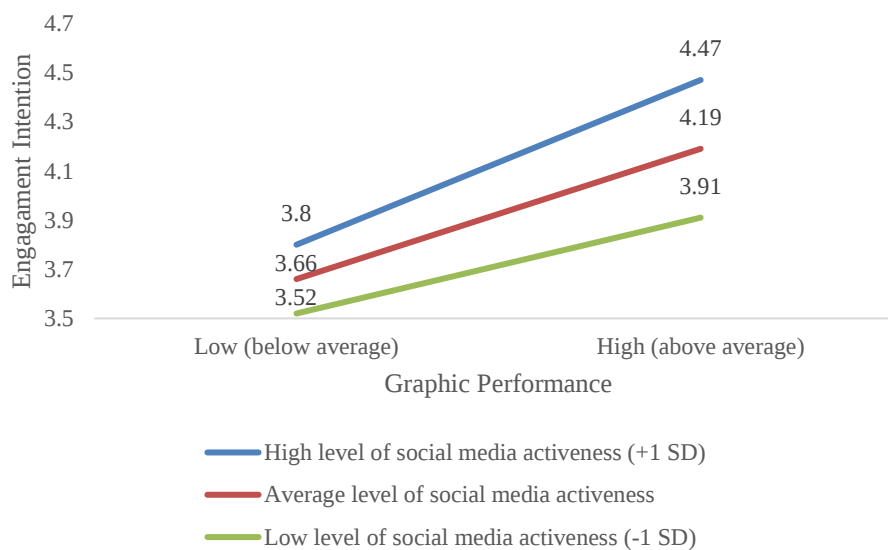


Figure 10: The moderating effect for H3c

The moderating effect of time spent on mobile games weekly on the relationship between engagement intentions and gameplay attractiveness is significant ($t=-3.711$, $p<0.01$), as suggested in Table 18. Viewers who spend less time (below average) on mobile games are more sensitive to the gameplay in the ads. Figure 11 shows different moderating effects of weekly time spent on mobile games. H3d is not supported.

n=381									
	y~x			m~x			y~x + m + x * m		
	Beta	t	p	Beta	t	p	Beta	t	p
Intercept	3.656	45.447	<0.01	3.656	45.782	<0.01	3.712	46.417	<0.01
x	0.554	9.127	<0.01	0.583	9.51	<0.01	0.537	8.653	<0.01
m				-0.019	-2.569	0.0111	-0.018	-2.408	0.017
x * m							-0.021	-3.711	<0.01
R ²	0.18			0.194			0.223		
Adjusted R ²	0.178			0.19			0.216		
F	F (1,379)=83.299			F (2,378)=45.565			F (3,377)=35.992		
	p<0.01			p<0.01			p<0.01		
x = gameplay attractiveness									
m = weekly time spent on mobile games									
y = engagement intentions									

Table 18: Linear models for H3d

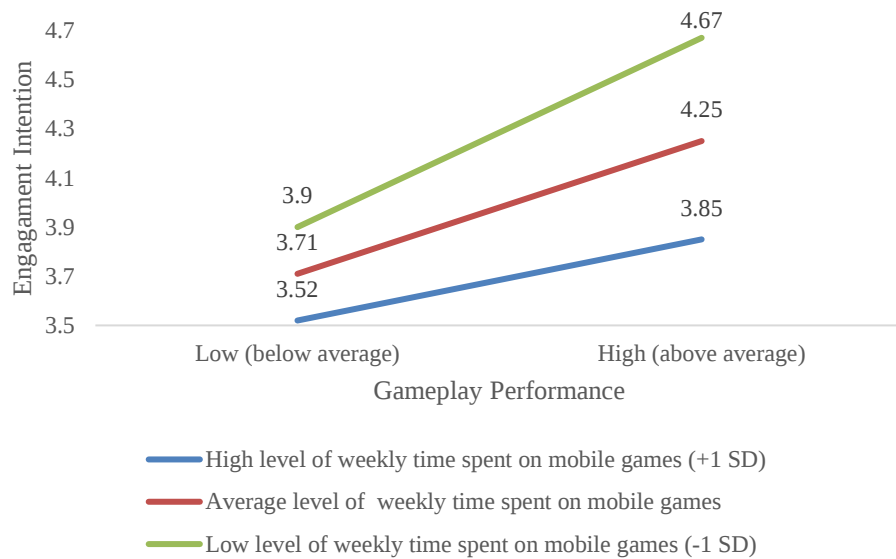


Figure 11: The Moderating Effect for H3d

The moderating effect of weekly time spent on mobile games on the relationship between engagement intentions and story attractiveness is significant ($t=-3.628, p<0.01$), as suggested in Table 19. Viewers who spend less time (below average) on mobile games are more sensitive to the storytelling in the ads. Figure 12 shows the different effects of weekly time spent on mobile games. H3e is not supported.

<i>n</i> =381									
	<i>y</i> ~ <i>x</i>			<i>m</i> ~ <i>x</i>			<i>y</i> ~ <i>x</i> + <i>m</i> + <i>x</i> * <i>m</i>		
	<i>Beta</i>	<i>t</i>	<i>p</i>	<i>Beta</i>	<i>t</i>	<i>p</i>	<i>Beta</i>	<i>t</i>	<i>p</i>
<i>Intercept</i>	3.656	45.573	<0.01	3.656	45.807	<0.01	3.697	46.578	<0.01
<i>x</i>	0.539	9.266	<0.01	0.558	9.537	<0.01	0.547	9.474	<0.01
<i>m</i>				-0.016	-2.215	0.027	-0.016	-2.154	0.032
<i>x</i> * <i>m</i>							-0.019	-3.628	<0.01
<i>R</i> ²	0.185			0.195			0.222		
<i>Adjusted R</i> ²	0.183			0.191			0.216		
<i>F</i>	<i>F</i> (1,379)=85.862			<i>F</i> (2,378)=45.827			<i>F</i> (3,377)=35.923		
	<i>p</i> <0.01			<i>p</i> <0.01			<i>p</i> <0.01		

x = story attractiveness

m = weekly time spent on mobile games

y = engagement intentions

Table 19: Linear models for H3e

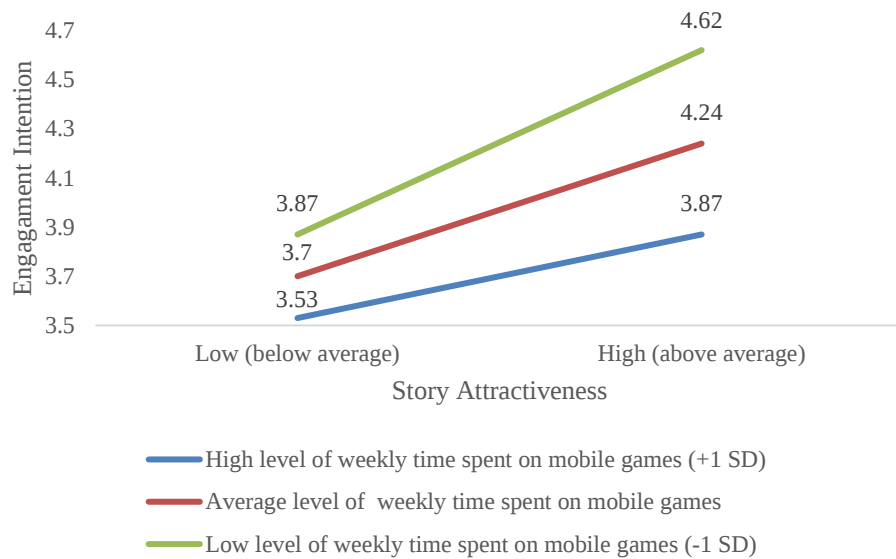


Figure 12: The moderating effect for H3e

The moderating effect of weekly time spent on mobile games on the relationship between engagement intentions and graphic performance is significant ($t=-2.438$, $p=0.015<0.05$), as suggested in Table 20. Viewers who spend less time (below average) on mobile games are more sensitive to the graphic performance in the ads. Figure 13 shows the different effects of weekly time spent on mobile games. H3f is not supported.

<i>n</i> =381									
	<i>y</i> ~ <i>x</i>			<i>m</i> ~ <i>x</i>			<i>y</i> ~ <i>x</i> + <i>m</i> + <i>x</i> * <i>m</i>		
	<i>Beta</i>	<i>t</i>	<i>p</i>	<i>Beta</i>	<i>t</i>	<i>p</i>	<i>Beta</i>	<i>t</i>	<i>p</i>
<i>Intercept</i>	3.656	45.709	<0.01	3.656	45.935	<0.01	3.683	46.132	<0.01
<i>x</i>	0.524	9.415	<0.01	0.541	9.674	<0.01	0.535	9.627	<0.01
<i>m</i>				-0.016	-2.183	0.03	-0.016	-2.123	0.034
<i>x</i> * <i>m</i>							-0.012	-2.438	0.015
<i>R</i> ²	0.19			0.2			0.212		
<i>Adjusted R</i> ²	0.187			0.195			0.206		
<i>F</i>	<i>F</i> (1,379)=88.641			<i>F</i> (2,378)=47.144			<i>F</i> (3,377)=33.822		
	<i>p</i> <0.01			<i>p</i> <0.01			<i>p</i> <0.01		

x = graphic performance

m = weekly time spent on mobile games

y = engagement intentions

Table 20: Linear models for H3f

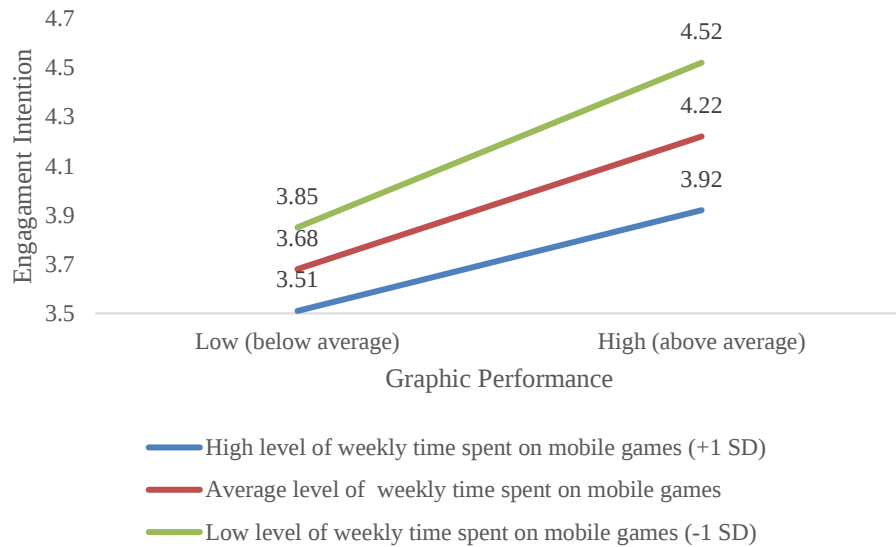


Figure 13: The moderating effect for H3f

The moderating effect is not significant in terms of the number of preferred mobile game genres on the relationship between engagement intentions and gameplay attractiveness ($t=-1.019$, $p=0.309>0.05$), suggested by Table 21. H3g is not supported.

<i>n</i> =381									
	<i>y</i> ~ <i>x</i>			<i>m</i> ~ <i>x</i>			<i>y</i> ~ <i>x</i> + <i>m</i> + <i>x</i> * <i>m</i>		
	<i>Beta</i>	<i>t</i>	<i>p</i>	<i>Beta</i>	<i>t</i>	<i>p</i>	<i>Beta</i>	<i>t</i>	<i>p</i>
<i>Intercept</i>	3.656	45.447	<0.01	3.656	45.438	<0.01	3.662	45.404	<0.01
<i>x</i>	0.554	9.127	<0.01	0.557	9.167	<0.01	0.554	9.095	<0.01
<i>m</i>				-0.093	-0.921	0.358	-0.105	-1.035	0.301
<i>x</i> * <i>m</i>							-0.077	-1.019	0.309
<i>R</i> ²	0.18			0.182			0.184		
<i>Adjusted R</i> ²	0.178			0.178			0.178		
<i>F</i>	<i>F</i> (1,379)=83.299			<i>F</i> (2,378)=42.057			<i>F</i> (3,377)=28.387		
	<i>p</i> <0.01			<i>p</i> <0.01			<i>p</i> <0.01		

x = gameplay attractiveness

m = number of preferred mobile game genres

y = engagement intentions

Table 21: Linear models for H3g

The moderating effect is not significant in terms of the number of preferred mobile game genres on the relationship between engagement intentions and story attractiveness (*t*=-0.787, *p*=0.432>0.05), suggested by Table 22. H3h is not supported.

<i>n</i> =381									
	<i>y</i> ~ <i>x</i>			<i>m</i> ~ <i>x</i>			<i>y</i> ~ <i>x</i> + <i>m</i> + <i>x</i> * <i>m</i>		
	<i>Beta</i>	<i>t</i>	<i>p</i>	<i>Beta</i>	<i>t</i>	<i>p</i>	<i>Beta</i>	<i>t</i>	<i>p</i>
<i>Intercept</i>	3.656	45.573	<0.01	3.656	45.548	<0.01	3.66	45.501	<0.01
<i>x</i>	0.539	9.266	<0.01	0.541	9.288	<0.01	0.543	9.306	<0.01
<i>m</i>				-0.077	-0.768	0.443	-0.087	-0.864	0.388
<i>x</i> * <i>m</i>							-0.061	-0.787	0.432
<i>R</i> ²	0.185			0.186			0.187		
<i>Adjusted R</i> ²	0.183			0.182			0.181		
<i>F</i>	<i>F</i> (1,379)=85.862			<i>F</i> (2,378)=43.179			<i>F</i> (3,377)=28.964		
	<i>p</i> <0.01			<i>p</i> <0.01			<i>p</i> <0.01		

x = story attractiveness

m = number of preferred mobile game genres

y = engagement intentions

Table 22: Linear models for H3h

The moderating effect is not significant in terms of the number of preferred mobile game genres on the relationship between engagement intentions and graphic performance (*t*=-1.059, *p*=0.29>0.05), suggested by Table 23. H3i is not supported.

<i>n</i> =381									
	<i>y</i> ~ <i>x</i>			<i>y</i> ~ <i>x</i> + <i>m</i>			<i>y</i> ~ <i>x</i> + <i>m</i> + <i>x</i> * <i>m</i>		
	<i>Beta</i>	<i>t</i>	<i>p</i>	<i>Beta</i>	<i>t</i>	<i>p</i>	<i>Beta</i>	<i>t</i>	<i>p</i>
<i>Intercept</i>	3.656	45.709	<0.01	3.656	45.706	<0.01	3.663	45.664	<0.01
<i>x</i>	0.524	9.415	<0.01	0.528	9.46	<0.01	0.531	9.507	<0.01
<i>m</i>				-0.097	-0.973	0.331	-0.116	-1.141	0.255
<i>x * m</i>							-0.077	-1.059	0.29
<i>R</i> ²		0.19			0.192			0.194	
<i>Adjusted R</i> ²		0.187			0.187			0.188	
<i>F</i>		<i>F</i> (1,379)=88.641			<i>F</i> (2,378)=44.788			<i>F</i> (3,377)=30.242	
		<i>p</i> <0.01			<i>p</i> <0.01			<i>p</i> <0.01	

x = graphic performance

m = number of preferred mobile game genres

y = engagement intentions

Table 23: Linear models for H3i

Despite that most of the hypotheses regarding moderation were rejected, the findings are valuable: Weekly time spent on mobile games is a moderator, but with an opposite effect as the authors assumed. Viewers spending more time on mobile games are less sensitive to changes in gameplay, storytelling, and graphics, making the viewers harder to be sold on the video ads than those who spend less time on mobile games.

4.4.4 Moderators and Engagement Intentions

The direct relationships between each moderator and engagement intentions were tested using simple linear regression.

The relationship between engagement intentions and the number of active social media used simultaneously is not significant (*F*=0.77, *p*=0.381>0.05), as shown in Table 24. H4a is not supported.

<i>n</i> =381							
	<i>Beta</i>	<i>t</i>	<i>p</i>	<i>SD</i>	<i>R</i> ²	<i>Adjusted R</i> ²	<i>F</i>
<i>Intercept</i>	3.861	18.653	<0.01	0.207			
<i>x</i>	-0.064	-0.877	0.381	0.073	0.002	-0.001	<i>F</i> (1,379)=0.77, <i>p</i> =0.381

Table 24: Linear model for H4a

The direct relationship between engagement intentions and weekly time spent on mobile games was tested significant (*F*=11.153, *p*<0.01) with a coefficient of 0.021. Table 25 summarizes the linear model. H4b is supported.

<i>n</i> =381							
	<i>Beta</i>	<i>t</i>	<i>p</i>	<i>SD</i>	<i>R</i> ²	<i>Adjusted R</i> ²	<i>F</i>
<i>Intercept</i>	3.387	30.167	<0.01	0.112			
<i>x</i>	0.021	3.34	<0.01	0.006	0.029	0.026	<i>F</i> (1,379)=11.153, <i>p</i> <0.01

Table 25: Linear model for H4b

The direct relationship between engagement intentions and the number of preferred genres of mobile games was tested significant ($F=4.831$, $p=0.029<0.05$) with a coefficient of 0.185, as shown in Table 26. H4c is supported.

<i>n=381</i>							
	<i>Beta</i>	<i>t</i>	<i>p</i>	<i>SD</i>	<i>R²</i>	<i>Adjusted R²</i>	<i>F</i>
<i>Intercept</i>	3.236	14.917	<0.01	0.217	0.013	0.01	<i>F (1,379)=4.831,</i> <i>p=0.029</i>
<i>x</i>	0.185	2.198	0.029	0.084			

Table 26: Linear model for H4c

The authors did not find a significant relationship between engagement intentions and the number of active social media used simultaneously, but the relationships between engagement intentions and mobile game behaviors were found significant. Engagement intentions differ in viewers with different mobile game behaviors, and the results suggested that weekly time spent on gaming has a closer related to engagement intentions due to a greater R^2 .

4.4.5 Summary

Most hypotheses in H1, H2, H4 were supported except in H3 where no significant moderating effects were found. One exception was the weekly time spent on mobile games, which has an opposite effect to what the authors have proposed although the direct relationships between engagement intentions and mobile game behaviors were found significant. In general, the core hypotheses (H1) were tested significant on 1-percent level, confirming the effects of video ad attributes and the mediating effects of content credibility and the extent of surprise are significant. The findings in the study thus encourage practitioners to allocate more advertising resources to video ad attributes presentation (gameplay in particular) in short video ads, and to pursue a more precise targeting based on viewers' mobile gaming behaviors. The findings bridge the research gap between video ad attributes together with mobile game behaviors and engagement intentions of Chinese customers. Nonetheless, the study has some limitations, which will be discussed in the Conclusions chapter. Table 27 summarizes the results of hypothesis testing.

Hypothesis	Description	Result
1a	Direct relationships between engagement intentions and video ad attributes	Supported **
1b		Supported **
1c		Supported **
1d		Supported **
2a	Mediating effects of perceived credibility and the extent of surprise	Supported
2b		Not supported
3a	The moderating effects of weekly time spent on mobile games, the number of active social media used at one time and mobile game genres	Not supported
3b		Not supported
3c		Supported *
3d		Not supported **
3e		Not supported **
3f		Not supported **
3g		Not supported
3h		Not supported
3i		Not supported
4a	Direct relationships between moderators and engagement intentions	Not supported
4b		Supported **
4c		Supported *

Table 9: Summary of the hypothesis testing

* Significant on 5-percent level

** Significant on 1-percent level

5. Discussion

In this chapter, the results of the hypothesis test will be discussed thematically, focusing on (i) direct relationships of video attributes and engagement intentions, (ii) content credibility and the extent of surprise as mediators, and (iii) social media and mobile game behaviors as moderators. Relevant implications of the results will be presented.

5.1 Interpretation of Results and Findings

The relationship between engagement intentions and graphic performance, story attractiveness and gameplay attractiveness are fundamental in the study, and the findings are consistent with the results of the question “What will you consider when you decide to play a mobile game?”, in which most participants believed that gameplay is the key factor when choosing a mobile game to play, and the effect of graphic performance and storytelling is close to each other. According to the results of the evaluations of video ads presented to the participants, graphic performance, gameplay attractiveness and story attractiveness are positively correlated with engagement intentions with gameplay attractiveness having the strongest effect, 53.9 percent and 33.7 percent stronger than that of graphic performance and story attractiveness, respectively. This finding implies that Chinese young audiences tend to pay more attention to the gameplay presented in video ads, a valuable information for mobile game publishers seeking to extend their business in China. With an attractive gameplay, publishers can then optimize the storytelling and graphic performance in the ads.

According to the study, human presence has a positive impact on engagement intentions. The impact mainly comes from the intercept, suggesting that viewers tend to already have higher engagement intentions for ads with human presence than ads without human presence regardless graphic performance, story and gameplay attractiveness. The finding thus calls for more attention to featuring human when mobile game publishers design their video ads. On the other hand, the center of this study is social media ads, which are a subset of Internet ads where ads with human presence are not always the optimal choice. Thus, there may be other circumstances where ads with human presence are not as effective as ads without human presence.

The mediating effects of content credibility on the relationship between engagement intentions and graphic performance are supported, but it is not the case for the extent of surprise. If mobile game publishers are informed that their ads lack of content credibility or fun, they may improve graphic performance of the ads to increase content credibility, which eventually boosts viewers’ intentions to engage and even download the game. However, the study does not seek to exclude other video ad attributes that are correlated with the perceived content credibility and the extent of surprise. Further research on the ad evaluation is welcomed to find more mediators.

The findings regarding the effects of moderators may help both the academia and mobile game marketing managers better understand the audiences. For audiences who are active on more social media platforms, graphic performance is more effective than it is for those who are active on fewer platforms. For active users of social media, ads that are more visually satisfying will grasp more attention. According to the research, except for graphic performance, no significant moderating effect was observed between engagement intentions and other video attribute. But this does not mean that the number of simultaneously used social media platforms does not work as the only measurement of social media use. In the multi-media environment, the number of simultaneously used social media platforms simultaneously proves to complement the previous measurements of social media use including

intensity. The authors therefore suggest that future studies could combine the number of social media platforms used simultaneously with intensity of social media use to present a more complete media use group profile.

Compared with other proposed moderators, weekly time spent on mobile games could provide deeper insights. For audiences who spend less time on mobile games, they are more sensitive to gameplay, storytelling, and graphic performance than hard-core gamers. It can be argued that hard-core gamers have fixed preferences in terms of the type(s) of gameplay, storytelling, and graphics of mobile games, resulting in a greater difficulty in influencing their choice merely by video ads. However, those who do not spend as much time on those games may have yet formed their own preference, making them open for new games. Besides, the overall engagement intentions of participants who spend more time on mobile games every week is significantly lower, suggesting a stricter and more critical attitude when evaluating the ads by hard-core gamers. From this we know that the effect of video ads cannot be compared between games targeting hard-core gamers and those targeting casual gamers, and it requires more efforts to convince hard-core gamers that your product is “the game” for them.

The moderating effect of the number of preferred genres is not supported in the study, suggesting that the diversity of genre preferences may not affect the engagement intentions on video ads. However, the results show that Chinese participants who prefer action mobile games have the strongest engagement intentions, and players in the United States also prefer action games (Bilgihan et al., 2013), indicating that game genre preference in the young generation may not vary significantly across countries.

By examining the direct relationship between engagement intentions and mobile game behaviors (weekly time spent on mobile games and the number of preferred mobile game genres), the authors found a statistically significant but minor relationship between engagement intentions and mobile game behaviors, implying hard-core gamers but given the small R^2 s in the models. The authors thus asserted that viewers with different mobile game behaviors do not necessarily exhibit substantial difference in engagement intentions.

5.2 Further Discussion

The effects of video ad attributes may be already discovered by some game publishers, and such game publishers adopt different strategy to maximize engagement intentions of their ads, and one of the strategies is misleading ads. Some mobile game video ads on social media are misleading in which gameplay, storytelling and graphics presented do not represent the actual in-game content. For example, the ads of Lily’s Garden (Tactile, 2019) usually present a dramatic story of Lily Roberts, and do not reveal the authentic gameplay. However, the game itself has a match-three gameplay just like Candy Crush Saga (King, 2012), and players cannot experience any of the stories presented in the ads. Publishers like Tactile are aware of the importance of storytelling in video ads. Thus, their strategy is to convince viewers that their game is as adventurous and fascinating as presented in the ads, thus alluring them to download the game. Such a strategy has yielded so abundant fruits that more mobile game publishers are turning to it. Even though players will soon find out trick and have negative emotions, many of them would keep the game and even pay for in-game contents.

However, this strategy is not conducive to sustainable profitability and human ethics and risks the reputation of the whole industry: players are becoming familiar with misleading ads and no longer believe any content in them, depleting the effectiveness of advertising for mobile games. Some have started to lay public pressures on mobile game publishers by reporting the misleading ads to app stores.

Meanwhile, governments around the world have set out to regulate mobile game advertising businesses. One recent case is the ads of Homescapes (Playrix, 2017) and Gardenscapes (Playrix, 2016) being banned for misleading content by the Advertising Standards Authority in the United Kingdom in 2020 (BBC News, 2020). Such is a lose-lose situation. Consequently, the authors call on mobile game publishers to utilize the findings in the current and future research in a virtual way, eliminate misleading ads, and present faithful contents, which is no easy task but still necessary.

Like the mobile game advertising, advertising for travel services also acknowledges the importance of consumers' involvement in the Internet ads. Rasty et al. (2013) found that involvement is the factor that has the greatest impact on the relationship between Internet travel advertising attitudes and the advertising effect. The authors thus suggest that travel agencies can make their online ads more attractive to potential customers by increasing the sense of engagement through improving graphic quality and telling convincing stories. Other experience-oriented industries such as the movie, toy and live performance industry can also transfer similar strategies to their own operation.

6. Conclusions

In this chapter, the authors will present the conclusion starting from theoretical contributions and managerial implications to limitations and suggestions for future research.

The motivation of this study was formed in the context of heavier social media use, stronger performance of the mobile game market, and increasing investments in mobile game ads. For mobile game developers, attributes of mobile games are crucial metrics to be considered when cultivating a game into a potentially heated product. Besides, marketers should understand which attributes to prioritize to increase customer engagement. China's position as the largest mobile game market and the lack of study on game advertising in the Chinese market constitute a novel empirical context. Even though subjects like customer engagement, game advertising, mobile game behaviors, and social media use have been separately researched, the theoretical connections among them are overlooked. Together with that, the ambiguity of mobile gaming research leaves a research gap on gaming advertising in the social media ecosystem. The purpose of this study, therefore, is to establish quantitative relationships between video ad attributes and intentions to engage with the ads; to examine the moderating effect of gaming and social media behaviors as well as the mediating effect of perceived ads content credibility, and the extent of surprise ads brought to viewers.

6.1 Theoretical Contributions

The study has made a theoretical contribution to around-game advertising since mobile game video ads are classified as interstitials. Furthermore, the authors filled the gap of the relationship between customer engagement and video attributes of mobile games, while previous studies were confined to non-digital traditional products. It is crucial to note that this study added social media use and mobile game use as moderating factors in the empirical study in the context of the current multi-media environment. The results have shown distinctive effects of video attributes on the viewers' engagement intentions. Compared to graphic performance and story attractiveness, gameplay attractiveness was proved to play a decisive role in mobile game video ads. Video ads with human presence have a natural advantage over those without human presence. One imperative finding from the results reveals the existing mediating effect of ads content credibility on the relationship between graphic performance/human presence and viewer intentions to engage as well as the existing mediating effect of the extent of surprise on the relationship between story attractiveness and customer engagement.

Another imperative finding is that the positive effect of graphic performance is more salient for viewers who use social media more frequently while people who spend less time playing mobile games are more sensitive to gameplay, storytelling, and graphic performance.

6.2 Managerial Implications

In the mobile gaming industry, our findings regarding the effect of video ad attributes and social media user groups contribute to providing marketers with cost-effective investment choices. The authors chose the Chinese market as their subject for it is the biggest market not only of social media but also mobile games. Through the findings, marketers could better leverage video attributes and realize a more fruitful marketing. What is more, this study looks at the overall performance of mobile game ads, the findings of which could be extended to the digital marketing of other digital products and services. Therefore, the study goes beyond the mobile game industry and could inspire reflections on the advertising of other fields.

The study also suggests that social media behavior has no significant moderating effect on engagement intention, thus social media or community that is specialized in certain contents such as comics, beauty and history can also be considered to run appropriate mobile game video ads on. To create an advertisement environment with better quality for social media users, social media platform providers could be more aware of censoring promotional activities offered by brand companies given findings about preference on video attributes from this research.

6.3 Limitations

The limitations include limited samples, video source bias, and the gap between engagement intentions and download behaviors.

Firstly, the structure and diversity of the samples could be improved to increase generalizability. In the current research, the samples included consumers aging from 16 and 52 with the majority in their twenties, creating an uneven age distribution. Additionally, eight videos were selected from the Facebook Ads Library to represent the current video ads in the market. Although the authors tried their best to select the most relevant videos (covering four genres and various predicated graphic performance), the clips still failed to fully represent all attributes the current video ads possess. Therefore, a more balanced and larger sample size and a greater diversity of samples would be needed. Secondly, the sources of the videos could not avoid bias. The reason is that no matter how science-based the selection is, the ads were chosen artificially, not randomly, which is bound to harbor more or less human preference, consequently affecting the rating of the participants.

Thirdly, it needs to be noted that the aim of this study is to examine the relationship between video ad attributes and people's intentions to engage, which shed some light on how to strengthen viewers' motivation and intention before they really take actions. Studying engagement intentions rather than the engagement behavior was the decision of the authors as to take the lead in learning the performance of the around-game advertising. Furthermore, the study only used one metric – the number of social media platforms being actively used at the same time – to suggest its representativeness. However, it should not be the only measurement in terms of the use of social media platforms, so that marketers and researchers could have a more comprehensive picture of the user groups of social media.

6.4 Future Research

The study has paved the way for an interdisciplinary research across around-game advertising and customer engagement in the context of a multi-media environment. Further research could be conducted toward different directions to strengthen the current research.

Firstly, the study is novel in the relevant field starting from viewers' intentions to engage. Due to limited resources and capability, video materials used in the questionnaires are insufficient in the diversity of ads attributes and could be more effective in controlling variables by relevant ad editing and creating technologies.

Secondly, the study discussed the relationships between video ad attributes and viewers' intentions to engage. To expand the research scope and to provide implications directly available to marketing managers, other dependent variables such as the actual download behavior of viewers should be included in future studies. Furthermore, the study focuses on the number of actively used social media platforms at one time as the single measurement of social media use. For further research, more moderators could be introduced including the intensity of using social media platforms to represent the behavior more comprehensively and to examine their influences on marketing effectiveness.

Thirdly, the research was based on the Chinese market, one full of potentials but has yet to come to the spotlight on the academia. The discussion and analysis in this study are far from being comprehensive. Therefore, further research on this geometric market is encouraged.

Lastly, our findings provide the industry as well as the academia with attributes of video ads that deliver a more effective marketing to Chinese customers differing in mobile game behaviors and the frequency of social media usage. Since Chinese use different social media platforms from overseas counterparts, the framework needs to be empirically experimented on other geographic markets and further research are suggested to be localized.

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Appendix A. Video Ad Selection Criteria

Selected Game	Popularity in China	Genre	Story Theme	Graphic Performance	Human Presence	English Intensity	Publisher Origin
State of Survival	Medium	Strategy	Zombie Crisis	Medium	No	Low	China
Candy Crush Saga	High	Simulation	None	Medium	No	Low	Sweden
Lily's Garden	Low	Simulation	None	Medium	No	Low	Denmark
Hero Wars	Low	Role-playing	Army Battle	Low	No	Low	Cyprus
Homescapes	Medium	Simulation	Cat Rescue	Low	No	Low	Russia
Mobile Legends: Bang Bang	Low	Action	Husband & Wife	High	Yes	Low	China
League of Legends: Wild Rift	High	Action	None	High	No	Low	United States
Rise of Kingdoms	High	Strategy	Female enthusiast	High	Yes	High	China

Appendix B. URLs for Selected Video Ads

Selected Game	Video Ad URL
State of Survival	https://youtu.be/CGKm0spyuDQ
Candy Crush Saga	https://youtu.be/YveI ZZQNkHE
Lily's Garden	https://youtu.be/PJ5JwmWfxJw
Hero Wars	https://youtu.be/IKRqMfuPcfE
Homescapes	https://youtu.be/zuC4R30z6P4
Mobile Legends: Bang Bang	https://youtu.be/mlET5piu_gQ
League of Legends: Wild Rift	https://youtu.be/S7knzR_ZM94
Rise of Kingdoms	https://youtu.be/XD0Pc_a-zyc

Appendix C. Translated Sample of Questionnaire

Survey on Ads of Mobile Games

The student's project. As an integral part of the educational program at the Stockholm School of Economics, enrolled students complete an individual thesis. This work is sometimes based upon surveys and interviews connected to the subject. Participation is naturally entirely voluntary, and this text is intended to provide you with necessary information that may concern your participation in the study or interview.

You can at any time withdraw your consent and your data will thereafter be permanently erased.

Confidentiality. Anything you say or state in the survey or to the interviewers will be held strictly confidential and will only be made available to supervisors, tutors and the course management team.

Secured storage of data. All data will be stored and processed safely by the SSE and will be permanently deleted when the project is completed.

No personal data will be published. The thesis written by the students will not contain any information that may identify you as a participant to the survey or interview subject.

Your rights under GDPR. You are welcome to visit <https://www.hhs.se/en/about-us/dataprotection/in> order read more and obtain information on your rights related to personal data.

The main purpose of this survey is to study the effect of video ads on viewer behaviors in the mobile games industry. The survey consists of 18 questions and 2 videos (15~30s each) and will take you around 4 minutes to finish.

Thanks for your support!

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*Required

In the first section of the questionnaire, you'll be asked questions about yourself and your experience in gaming.

1. What is your age? *

Mark only one oval.

- ☐ < 15
☐ 15-19
☐ 20-24
☐ 25-29
☐ 30-34
☐ >34

2. What is your gender? *

Mark only one oval.

- ☐ Male
☐ Female
☐ Other
☐ Prefer not to say

3. Which of the following apps do you use at least 3 times every week (Choose all options that apply)? *

Tick all that apply.

- ☐ Facebook
☐ Instagram
☐ Snapchat
☐ TikTok
☐ YouTube
☐ WeChat
☐ None of above

4. What platform(s) have you played video games on (Choose all options that apply)? *

Tick all that apply.

- ☐ Windows
☐ Mac
☐ Console (PS4, Xbox One S, Nintendo Switch)
☐ Mobile phone
☐ None of above

5. Which of the following genres of games do you like to play (Choose all options that apply)? *

Tick all that apply.

- ☐ Simulation (The Sims, Need for Speed, Pokémon GO, etc.)
☐ Strategy (Warcraft, Hearthstone, Clash of Clans, etc.)
☐ Action (Super Mario, Half-Life, Tekken, etc.)
☐ Role-playing (World of Warcraft, The Witcher, Fallout, etc.)
☐ I don't like playing video games

Other: ☐ _____

6. How long have you played mobile games? *

Mark only one oval.

- ☐ Never
☐ 1-2 year(s)
☐ 3-5 years
☐ More than 5 years

7. How many hours per week have you spent on mobile games on average over the past month? *

8. Have you watched any video ads for mobile games? *

Mark only one oval.

- ☐ Yes
☐ No
☐ Can't recall

9. Have you downloaded a mobile game after watching its video ad? *

Mark only one oval.

- ☐ Yes
☐ No
☐ Can't recall

What will you consider when you decide to play a mobile game? Please grade each criterion from 1 to 7:

10. How to play the game *

Mark only one oval.

	1	2	3	4	5	6	7	
Not important at all	☐	☐	☐	☐	☐	☐	☐	Very important

11. What the game looks like *

Mark only one oval.

	1	2	3	4	5	6	7	
Not important at all	☐	☐	☐	☐	☐	☐	☐	Very important

12. How many people are playing the game *

Mark only one oval.

	1	2	3	4	5	6	7	
Not important at all	☐	☐	☐	☐	☐	☐	☐	Very important

13. Whether the story in the game is intriguing *

Mark only one oval.

	1	2	3	4	5	6	7	
Not important at all	☐	☐	☐	☐	☐	☐	☐	Very important

14. Whether the game is recommended by someone I know *

Mark only one oval.

	1	2	3	4	5	6	7	
Not important at all	☐	☐	☐	☐	☐	☐	☐	Very important

15. Whether I can play with friends *

Mark only one oval.

	1	2	3	4	5	6	7	
Not important at all	☐	☐	☐	☐	☐	☐	☐	Very important

In the second section, you will watch 2 video ads from 2 different mobile games. Suppose you choose to click the videos while watching, you will be directed to the download page of the corresponding game.

Please watch the first video, and then make a decision to click (or not click) the video in your mind before answering following questions.



<http://youtube.com/watch?v=CGKm0spyuDQ>

16. How willing are you to click the video to download this mobile game (1-7: from not willing at all to very willing): *

Mark only one oval.

	1	2	3	4	5	6	7	
Not willing at all	☐	☐	☐	☐	☐	☐	☐	Very willing

17. Please choose one option that describes your decision-making process of whether to click the video (or not) most accurately: *

Mark only one oval.

- ☐ Instantly decided to click (or not click)
- ☐ Thought for a while, then decided to click (or not click)

Please grade the video in the following criteria:

18. How the video looks *

Mark only one oval.

	1	2	3	4	5	6	7	
Very bad	☐	☐	☐	☐	☐	☐	☐	Very nice

19. How interesting the storytelling is *

Mark only one oval.

	1	2	3	4	5	6	7	
Very boring	☐	☐	☐	☐	☐	☐	☐	Very interesting

20. How attractive the gameplay is *

Mark only one oval.

	1	2	3	4	5	6	7	
Not attractive at all	☐	☐	☐	☐	☐	☐	☐	Very attractive

Do you agree with the statements below (1: strongly disagree, 7: strongly agree)?

21. The video accurately represents the content of the game. *

Mark only one oval.

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

22. I am surprised by the contents in the video. *

Mark only one oval.

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

23. The video is very attractive overall. *

Mark only one oval.

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

Please watch the second video, and then make a decision to click (or not click) the video in your mind before answering following questions.



<http://youtube.com/watch?v=YveIZZQnkHE>

24. How willing are you to click the video to download this mobile game (1-7: from not willing at all to very willing): *

Mark only one oval.

	1	2	3	4	5	6	7	
Not willing at all	☐	☐	☐	☐	☐	☐	☐	Very willing

25. Please choose one option that describes your decision-making process of whether to click the video (or not) most accurately: *

Mark only one oval.

- ☐ Instantly decided to click (or not click)
- ☐ Thought for a while, then decided to click (or not click)

Please grade the video in the following criteria:

26. How the video looks *

Mark only one oval.

	1	2	3	4	5	6	7	
Very bad	☐	☐	☐	☐	☐	☐	☐	Very nice

27. How interesting the storytelling is *

Mark only one oval.

	1	2	3	4	5	6	7	
Very boring	☐	☐	☐	☐	☐	☐	☐	Very interesting

28. How attractive the gameplay is *

Mark only one oval.

	1	2	3	4	5	6	7	
Not attractive at all	☐	☐	☐	☐	☐	☐	☐	Very attractive

Do you agree with the statements below (1: strongly disagree, 7: strongly agree)?

29. The video accurately represents the content of the game. *

Mark only one oval.

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

30. I am surprised by the contents in the video. *

Mark only one oval.

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree

31. The video is very attractive overall. *

Mark only one oval.

	1	2	3	4	5	6	7	
Strongly disagree	☐	☐	☐	☐	☐	☐	☐	Strongly agree