AOSIS

The role of perceived value of information disclosure on gaming motives and mobile game play

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Background: Growing smartphone penetration rates and the development of mobile games are some of the factors driving the mobile game market. Because mobile gaming collects personal information, it is imperative to understand the information trade-off. This study fills the gap of how perceived levels of value during information disclosure impact gameplay motivators of mobile game adoption.

Objectives: The main objective of the study was to investigate the moderating role of perceived value of information disclosure on the relationship between mobile gaming motivators and the intention to play mobile games.

Method: A self-administered online survey was promoted by means of online advertisements on Facebook and Instagram to collect data from 477 mobile game players in Africa and Asia. Analysis of moment structures (AMOS) was used to conduct invariance testing and moderation analyses.

Results: The results of the study revealed that the perceived value of information disclosure moderated the relationship between social influence and the intention to play mobile games.

Conclusion: This study highlights the importance of managing information disclosure by increasing the perceived benefits of mobile gaming as this will minimise the effect of social influence on the intention to play mobile games.

Contribution: This study contributes to mobile gaming literature by exploring mobile gaming behavioural patterns that can assist game developers to influence the way people exchange their personal information when engaging in mobile gameplay. Practically, understanding when a game will deliver enough value to drive gaming behaviour is required to effectively develop and implement mobile gaming strategies.

Keywords: mobile game; escapism; fantasy; achievement; social influence; perceived value; adoption; moderation.

Introduction

With more than 2.2 billion active mobile gamers worldwide (Wise 2023), mobile gaming is witnessing phenomenal growth and has since surpassed other forms of gaming on, for example, personal computers or consoles (Mordor Intelligence 2022). Factors in favour of this growth include, inter alia, growing smartphone penetration rates, increasing access to 4G and 5G Intenet, declining cost of Internet data bundles, increased use of cutting-edge technology for game development, partnerships among global gaming companies and growing interest from a techno-savvy younger generation (Kirubakaran & Priyanka 2021; Mordor Intelligence 2022). In recent years, the advent of coronavirus disease 2019 (COVID-19) has stimulated game development during a time when most countries were under severe lockdown (Mordor Intelligence 2022). Consequently, many people resorted to mobile gaming to escape boredom while in quarantine settings imposed by travel restrictions (Amin, Griffiths & Dsouza 2022). Despite the growth of mobile gaming, it is not without challenges, such as those related to information disclosure, yet the perceived value of information disclosure has received little attention in the mobile gaming context. The exponential growth of the mobile gaming industry warrants the need to understand the role of perceived value of information disclosure, especially given that game enthusiasts have to sign up for their preferred mobile games.

A plethora of studies have examined motivations for mobile game adoption (Baabdullah 2018; Baek & Touati 2017; Laor 2020; Lee 2019; Lee, Lee & Choi 2012; Li et al. 2015; Merhi 2016; Sailer et al. 2017). Extant literature indicates that at a personal level, players seek pleasurable emotional

outcomes, a sense of achievement or simply to escape from real life, while at a social level, players seek communal achievement as they feel obligated to belong to a certain gaming community (Chang, Hsieh & Lin 2018; Cheah, Shimul & Phau 2022; Yang & Liu 2017). Although mobile gaming adoption is increasing, the extent to which players are willing to give up personal information to enjoy the personal and/or social aspects of gaming has not been explored. Some studies have examined perceived value exchange from the perspective of perceived benefits versus costs (Chen & Fu 2018; Gómez-Barroso 2018; Molinillo, Japutra & Liébana-Cabanillas 2020). However, no empirical studies could be found that have explored the influence of perceived value of information from an information disclosure perspective on the adoption of games and more so in the mobile gaming context. Understanding the perceived value of information disclosure is important for gaming companies because mobile gamers need to provide personal information to download and/or engage in a game (Gómez-Barroso 2018). Sharing one's information can, for example, assist in finding gamers with similar interests or skills. When gaming companies are able to accumulate data points such as obtaining demographic insights, tracking responses to in-game elements and analysing user preferences, it allows them to provide better gaming experiences for players (Big Data News 2022).

The study draws from the expectancy-value theory of motivation (Wigfield 1994). The expectancy-value theory posits that individuals' expectancies for success and the value they have for succeeding are key determinants of their motivations to perform different achievement tasks (Wigfield 1994). This study proposes that the motivation to play a mobile game is directly determined by the player's expectations for becoming a successful gamer and the subjective value they attach to their success. In this regard, this study includes three personal mobile game motivators (escapism, fantasy and achievement) and one social mobile game motivator, namely social influence. From a social perspective, Baabdullah (2018) reported that the adoption of mobile games is directly influenced by the level of social influence. What is unknown, however, is how the perceived level of value received when signing up for a mobile game will impact the connections that other players have on one's intention to play mobile games. This is also true for personal gameplay motivations, namely how the perceived level of value while disclosing personal information for game access will impact the individual gamer's motivation of escapism, fantasy and achievement (Laor 2020; Li et al. 2015). Therefore, the main objective of the study is to determine the moderating role of perceived value of information disclosure on the relationship between mobile gameplay motivators (personal and social) and the intention to play mobile games. As Asia has the highest number of gamers in the world, estimated to be over 1 billion, while Africa registered over 186 million active mobile gamers in 2021 (Statista 2022a), these two continents were selected for data collection in this study.

Understanding the role of perceived value from an information management perspective is critical for game developers and marketers because it will provide guidance in terms of how information disclosure will offset against personal and social gameplay motivators, and how this can increase (or decrease) a player's intention to play mobile games. Gaining this information is crucial given that mobile games are one of the most promising and lucrative mobile entertainment services (Yang & Lin 2019). For example, sharing information can help players to find other like-minded gamers, which may add to their social experience (Big Data News 2022). As mobile games are one of the most promising and lucrative mobile entertainment services (Yang & Lin 2019), developers can benefit from understanding how gamers value their information, and what is needed for them to disclose their information. Ultimately, game developers can use the aggregate information of players to predict future market trends and improve gaming experiences (Big Data News 2022).

Literature review
Mobile gaming in context

Mobile gaming transcends all ages, locations or societies (Laor 2020). Increased mobile penetration rates, greater connectivity and processing power are some of the driving factors of mobile gaming (Cheah et al. 2022). Mobile games are broadly defined as 'embedded, downloadable or networked games, which are differentiated from other games by their portability, accessibility, networkability and simplicity' (Nam & Kim 2020:2). In short, mobile games are applications that are designed to be played on smartphones (Molinillo et al. 2020) and can be played with or without access to the Internet (Baabdullah 2018). Compared with mobile games, those developed for personal computers and consoles are more complex, have richer graphics and require larger time commitment (Molinillo et al. 2020). Of the many genres available (e.g., sports, adventure and action), casual games such as Candy Crush, Angry Birds and Massively Multiplayer Online Games (MMOG) are the most popular because the majority of them are free to download, easy to learn, have shorter play sessions and have simple rules to progress within the game (Laor 2020; Molinillo et al. 2020). Candy Crush and Pokémon Go are ranked as the top privacy-invasive mobile gaming applications collecting personal data at various data points, including location (Paiva 2022).

Mobile gaming is a highly profitable business. The Asia mobile gaming industry, which was projected to reach $85.4 billion by the end of 2022, is now expected to be valued at $127.50 billion by 2027 (Statista 2022b). Asia-Pacific is also assuming a leading role in the expansion of the global gaming market, as most companies in the region are producing innovative games. For instance, China-based Tencent Holdings teamed up with the Japan-based Pokémon Company to develop mobile games (Mordor Intelligence 2022). A similar trend is seen on the African continent. According to Oluwole (2022), the number of gamers on the African continent doubled over the last 5 years, with sub-Saharan Africa witnessing the fastest growth for mobile gamers. In South Africa, the proliferation of mobile

gaming has been boosted by successful internal government investment plans in the country's communications infrastructure (Statista 2020). The high-speed Internet and enhanced 4G and 5G coverage now widely available across South Africa will certainly see this market grow (Olaitan, Issah & Wayi 2021; Statista 2020). Against this backdrop, mobile game players in both Asia and Africa were included in the survey.

Technological developments, governmental investments and public–private partnerships (Mordor Intelligence 2022) positively impacted game developers as they opened up opportunities for individuals to play games on their mobile phones (because of cloud technology) without necessarily having to invest in consoles (Supply Chain Game Changer 2023). However, in order for individuals to access mobile games, they have to disclose personal information. Whether or not players agree to disclose this information depends on the perceived value of the information exchange (Xu et al. 2011). As such, the perceived value of information disclosure may impact the gameplay motivators that drive a player's intention to play the mobile game and will be investigated in this study. Obtaining information from players gives marketers the benefit of improved engagement with players, which can influence brand awareness and ultimately game adoption (Xi & Hamari 2020). Gamification can also provide marketers with opportunities to position the brand in a specific way, while obtaining valuable customer behaviour data for usage in future strategies (Uzialko 2023).

Theoretical foundation

As new technologies and information communications technology services have become more widely available to the general public, several information systems academics have proposed using value-based models to investigate information communications technology adoption. These academics claim that 'conventional' adoption models, such as Davis' (1989) Technology Acceptance Model, have inadequate ability or flexibility in explaining consumer acceptance of new information technologies. In contrast to technology users in businesses that are primarily focused on enhancing work performance through the use of simple technology, consumers are more concerned with the technology's value to them, as they sacrifice time, personal relationships and work to play games (Molinillo et al. 2020). As a result, analysing the value consumers perceive in utilising a new technology from an information disclosure perspective could be a better way to explain adoption intention for the particular technology. More so, the empirical findings would be of value to academics by adding to the existing literature and to managers in developing mobile games tailored to players' needs and values. Hence, the expectancy-value theory of motivation serves as the basis for this study.

Expectancy-value theory has been widely applied to different contexts such as health and education (De Simone 2015; Eccles & Wigfield 2002) but to a lesser extent in the information systems context and, specifically, mobile games. Although the expectancy-value theory model may differ in its meaning and implications for each context, a general understanding is that one's expectations, values and beliefs may affect subsequent goal-directed behaviour – which for this study is the intention to play mobile games (Eccles & Wigfield 2002). The theory posits that expectations and subjective task values are important influences on user motivations for success (De Simone 2015; Wigfield & Eccles 2000). In the context of this study, gamers have an achievement of a goal in mind, namely to successfully play the mobile game. This gameplay is performed in relation to the value of attaining the goal, namely achieving their personal and social gameplay motives.

Perceived value of information disclosure

According to the privacy calculus principle, individuals will perform a risk-benefit analysis (equivalent to perceived value) when requested to share their personal information (Awad & Krishnan 2006). For this study, the perceived value of information disclosure refers to the mobile gamer's likelihood to agree to give up a degree of privacy (personal information) in return for potential mobile game benefits related to the information disclosure (Xu et al. 2011). Unfortunately, as access to mobile games increased, so has the risks associated with access to information about the players and their mobile devices. Many mobile games require players to share information during signup, for example, personally identifiable information such as names and email addresses (Russell, Reidenberg & Moon 2018). Players may also give permission for location identification or allow access to their contacts, execute the option to add friends or use the real-time chat system within the game (Russell et al. 2018). In addition to disclosing one's information, gaming companies can also collect data through indirect means, such as cameras, sensors, microphones, social media and tracking technologies such as cookies (Russell et al. 2018).

As mentioned, individuals select mobile games based on their expectations that these games will provide certain benefits. In return for these benefits, players will disclose information for access to these mobile games. Some information may be disclosed willingly (upon request), and some may be collected indirectly (without a request for the information). One of the main reasons gaming companies allow for the tracking of player activities is for advertising purposes and measurement, which allows for better-targeted in-game advertising and management of player preferences (Big Data News 2022). However, when Apple gave users the option to opt out of being tracked for advertising purposes, most users accepted, resulting in 15% to 35% revenue loss across mobile app advertisers (Takahashi 2021). This is because data flows extend further than the game where gamer data are often combined with external partners such as advertisers (Russell et al. 2018).

If the game does not deliver in terms of the benefits expected, or if the risk of information disclosure outweighs the benefits, information disclosure may decrease (Xu et al. 2011). It is therefore important for gaming companies to understand the main reasons players adopt mobile games, and to transform these motivations into benefits. The question then arises whether different levels of perceived value of information disclosure will strengthen or weaken the relationship between the different motivators for adopting mobile games – and is therefore investigated in the study.

Mobile game adoption intention

Adoption intention can be described as the willingness to engage in certain actions that would result in some fruitful outcomes as expected (Baabdulah 2018). Venkatesh, Thong and Xu (2012) described adoption intention as a factor that evaluates the behaviours of individuals towards the use of a technological service. Thus, for the purpose of this study, behavioural intention drives people to engage in an activity (such as a mobile game) to obtain certain expected benefits. Several studies concur that adoption intention is a significant factor in attracting potential users of a technology (Baabdulah 2018; Bulduklu 2019; Venkatesh et al. 2012), such as mobile games.

Over the past decade, access to information on mobile games has contributed to the adoption of mobile games because of, among others: (1) social media platforms that promote mobile games by means of trailers or gameplay footage; (2) online communities and forums that make recommendations on mobile games; (3) streaming platforms such as YouTube Gaming that livestream gameplay session directly from mobile devices; (4) dedicated app stores that allow developers to publish their games and allow gamers access to a huge selection of games; and (5) cross-platform gaming that allows players to access their mobile games across multiple devices and platforms to connect with a broader community of gamers (Richardson 2011; Sirola et al. 2021; Wawrowski & Otola 2020; Yu et al. 2022). These developments probably contributed to the perceived value of information disclosure in exchange for mobile game access and engagement.

Past studies have reflected on the motivations to play including escapism, socialising, achievement (Cheah et al. 2022), rewards, enjoyment, fantasy and competition (Li et al. 2015; Zhang et al. 2021). More specifically, for this study, behavioural intention to adopt mobile games is described as the propensity to play a game on a mobile device to achieve set goals of fantasy, achievement, escapism and social cohesion (Merhi 2016). In Li et al.'s (2015) study, social influence was the most significant predictor of mobile gameplay, while in the study by Laor (2020), escapism was the dominant factor. Sedano et al. (2013) reported fantasy to be the most dominant motivator to play mobile games, while in the study by Bueno, Gallego and Noyes (2020), achievement had the greatest influence. These aforementioned motivators were selected for this study, not only because of their relevance to the mobile gaming context but also because of

their significant contribution to mobile game adoption. More specifically, the role of perceived value of information disclosure on these four gameplay factors in relation to intended mobile gameplay adoption is investigated.

Escapism as a personal gameplay motivator

In general, escapism is the relief of stress of the perceived mundaneness of everyday life (Laor 2020). For the gaming context, this study adopts the definition of escapism in which escapism is described as 'the need to avoid thinking about real life problems through immersion in the game' (Chang et al. 2018:45). According to Merhi (2016), users motivated by escapism search for specific objectives to achieve a tension-free motive, which then would elicit enjoyment of the game. Studies on escapism found that the gratification of this need has a positive influence on adoption (Laor 2020; Li et al. 2015; Merhi 2016). In addition, Matschke et al. (2014) posited that, at an individual level, the expectancy of the individual's contribution may decrease the cost of information exchange. Therefore, this study assumes that mobile gamers would be willing to disclose personal information to download mobile games that allow them to escape life's stresses. It is therefore hypothesised that:

> **H1:** Perceived value of information disclosure moderates the relationship between escapism and the intention to play mobile games.

Fantasy as a personal gameplay motivator

Fantasy describes the situation when a player is transported to an imaginary world (Bueno et al. 2020). As such, mobile games often include the creation of avatars, structures and environments, allowing for a fantasy realisation that does not normally occur in real life, such as building a base, exploring space or having a new identity (Li et al. 2015). A report by Lee et al. (2012) shows that fantasy feeds the hedonic gratification of a user and that fantasy is an important link to adopt computer games. In the information systems literature, fantasy has been widely reported as an important determinant of the adoption of mobile games (Lee et al. 2012; Li et al. 2015). Furthermore, it has been reported that when the expectations of individuals are met, it serves as a motivator for information disclosure (Matschke et al. 2014; Sun, Fang & Hwang 2019). It can therefore be assumed that the relationship between being transported into a fantasy world and game adoption should improve if the gamers receive more gameplay value when they disclose their personal information (Matschke et al. 2014; Sun et al. 2019). Therefore, it is hypothesised that:

> **H2:** Perceived value of information disclosure moderates the relationship between fantasy and the intention to play mobile games.

Achievement as a personal gameplay motivator

Achievement reflects the need for gamers to effectively produce desired outcomes or the ability to accomplish challenging tasks that are provided by the mobile game (Baek & Touati 2017). According to Sailer et al. (2017), the need for

achievement can be addressed through earning points or the use of performance graphs. In the gaming context, points provide the player with the desired motivational feedback that is directly linked to the actions of the player, while performance graphs are used to indicate player progress over time. The gratification of achievement can carry emotive, psychological and social predispositions, and as such, mobile games can be displayed to have these features to attract adoption (Li et al. 2015). However, what is not known is how the perceived value of information disclosure will affect the gratification of achievement when intending to play mobile games. It is assumed that the perceived value of information disclosure will be higher if it means gamers can download and play mobile games to obtain a sense of achievement. Hence, it is proposed that:

> **H3:** Perceived value of information disclosure moderates the relationship between achievement and the intention to play mobile games.

Social influence as a social gameplay motivator

Social influences are a user's perceived pressure from social groups on adoption behaviour and play a significant role in increasing the rate of adoption of digital services (Venkatesh et al. 2012), including mobile games. In this study, social influence is described as the extent to which players perceive that significant others believe that they should play a particular mobile game. As social influence directly affects adoption intention (Lee 2019; Sailer et al. 2017), it is important to acknowledge the significance of 'identification (imitating others already playing the game) and compliance between groups' (Baabdullah 2018:94). Online mobile games have become a platform for users to collaborate with other players, especially when it is a prerequisite to make progress in a game or in cases where the game is based on competition between players (Global Web Index 2020). Sun et al. (2019) stated that identification with a group and the expectations of successful collective action serve as motivators of information disclosure. While it is not known how the perceived value of information disclosure will affect social influence when intending to play mobile games, it is assumed that the perceived value of information disclosure will affect this positive relationship. It can therefore be hypothesised that:

> **H4:** Perceived value of information disclosure moderates the relationship between social influence and the intention to play mobile games.

The conceptual framework of the role of perceived value of information disclosure on the motivating gameplay factors that influence the intention to adopt mobile games is depicted in Figure 1.

Research methods and design
Sampling and data collection

The target population for the study was active adult mobile game players based in Africa or Asia. Non-probability purposive sampling was used by selecting
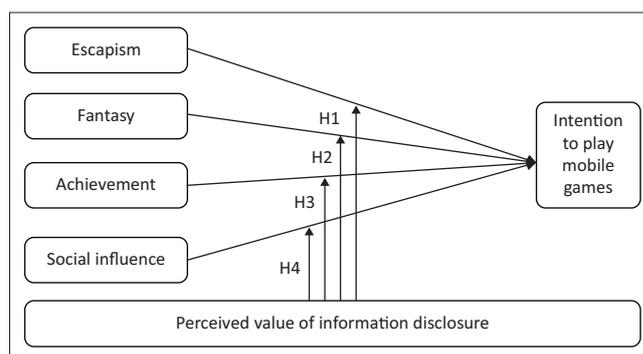
H, hypothesis.

FIGURE 1: Conceptual framework for the mobile gaming study.

sampling units that possess the characteristics needed in the sample (Etikan, Musa & Alkassim 2016). In this regard, respondents were screened for age (18+ years), mobile gaming activity (must have played a mobile game in the last 30 days) and continent (Africa or Asia). A self-administered online survey was promoted by means of online advertisements on Facebook and Instagram. The final realised sample was 477 respondents after the data were captured and cleaned. The data were analysed using Statistical Package for Social Sciences (SPSS) Version 28 for Windows and AMOS Version 28.

Measurement instrument

The measurement instrument consisted of three sections following the screening process. Section A in the measurement instrument assessed player typologies, which included playing time, playing frequency, session length, type of game preference, payments and game category history. Section B contained statements to measure gameplay motivators of mobile game adoption and the future intention to play mobile games. Section C collected the socio-demographic information of the respondents.

All the constructs were measured using a 7-point Likert-type response format ranging from 1 (strongly agree) to 7 (strongly disagree). The measurement scales for escapism and intention to play mobile games were drawn from Merhi (2016); the fantasy and achievement scales were adapted from Li et al. (2015); social influence scale items were taken from Baabdullah (2018) and the perceived value of information disclosure scale was adapted from Xu et al. (2011). The wording of the statements was slightly adjusted to suit the context of the study. The Cronbach's alpha coefficients for the adapted scale items ranged from 0.75 to 0.80; average variance extracted (AVE) values were 0.74 or greater; factor loadings for all items were above 0.50; and finally, all the items had previously been used in the context of online or mobile gaming. The questionnaire was pretested online with 30 respondents from the study population to determine the average completion time and to assess the suitability of the survey questions, question format, wording and order. Based on the feedback, no major changes were made to wording, structure and order of the questions.

TABLE 1: Invariance test results.

Nested model comparison	DF	CMIN	P
Measurement weights	14	11.255	0.666
Measurement intercepts	34	79.969	0.000
Structural covariances	55	126.694	0.000
Measurement residuals	75	177.963	0.000

DF, degrees of freedom; CMIN, Chi-square value.

Ethical considerations

Ethical clearance to conduct this study was obtained from the University of Pretoria Faculty of Economic and Management Sciences Research Ethics Committee (No. EMS/2019/ Vlok_B).

Results

Demographic and gaming profile of respondents

Male respondents constituted the majority of the sample (71.5%). Most respondents were aged 21 to 47 years (94.1%). Respondents were predominantly from Asia (73.45%), with 26.6% of respondents from the African continent. The number of years the respondents had been playing mobile games ranged from 1 to 4 years (22.7%), 5–9 years (46%) and 10 or more years (31.3%). Most of the respondents (71%) had a playing frequency of more than 30 game sessions in a month, with 29% playing less than 30 times in the last month. The average gaming session among respondents ranged between 30 min and 2 hours per day (75.5%). There was an equal split between those respondents who had paid for a mobile game or in-game item and those respondents who had not paid.

Invariance test results

This study was conducted across continents (Africa and Asia), and therefore, the first step was to conduct a multigroup analysis to determine the equivalence between the measures for the two continents. Table 1 shows the results for the nested model comparison, assuming the unconstrained model to be correct. The p-value of 0.666 for the structural measurement weights indicates no statistical significance, which supports metric invariance between the two continents. As subsequent analyses used the measures as latent variables, examining the differences in measurement residual variances was not necessary as these will not impact inferences about group differences in prediction as long as the loadings are equal across groups (Newsom 2020). Therefore, metric invariance can be assumed for the analysis.

Measurement model, reliability and validity

The next step was to consider the measurement model to assess the underlying factor structure for the constructs in this study. Structural equation modelling (SEM) was employed for data analysis using AMOS Version 28.0 software. The adequacy of the measurement model was tested using a confirmatory factor analysis (CFA). The results of the analysis demonstrated a satisfactory fit [CMIN/DF = 2.301; Goodness-of-Fit Index (GFI) = 0.930; Incremental Fit Index (IFI) = 0.948; Tucker–Lewis Index (TLI) = 0.936; Comparative Fit Index

(CFI) = 0.948; the root mean square error of approximation (RMSEA) = 0.052] as suggested by Hair et al. (2019).

The internal consistency reliability (Cronbach's alpha) of the constructs ranged from 0.853 to 0.908, meeting the 0.7 threshold for Cronbach's alpha (Pallant 2016). For convergent validity, the composite reliability (CR) and the AVE values were calculated. Most values met the Fornell and Lacker (1981) threshold criterion of values equal to or greater than 0.7 for CR, and AVE values of 0.5 and above. Although the AVEs for escapism and fantasy were slightly below 0.5, they were retained for further analysis as their composite reliabilities were above 0.6 and are to be considered to be acceptable in exploratory research (Hair et al. 2017).

The constructs were also subjected to discriminant validity using the heterotrait–monotrait ratio (HTMT) of correlations (Henseler, Ringle & Sarstedt 2015). Following the guidelines by Hair et al. (2019), all the values for the constructs were below the 0.8 threshold indicating discriminant validity.

Structural model and moderation analysis for hypotheses

The final step before hypothesis testing could commence was to assess the structural model. The structural model parameters satisfied the required limits for acceptable psychometric qualities: (X^2/DF = 2.715; RMSEA = 0.060; TLI = 0.932; CFI = 0.947; IFI = 0.947) (Hair et al. 2019).

Hypotheses 1–3 (personal gameplay motivators)

The results of the moderating effect of perceived value of information disclosure on the relationship between escapism and intention to play mobile games did not show a significant interaction effect (t-value = −1.3319; p-value = 0.1835). There was thus no support for Hypothesis 1.

Hypothesis 2 was not supported as the results of the moderating effect of perceived value of information disclosure on the relationship between fantasy and intention to play mobile games did not show a significant interaction effect (t-value = −1 = 0.9474; p-value = 0.3439).

Finally, the results of the moderating effect of perceived value of information disclosure on the relationship between achievement and intention to play mobile games also did not show a significant interaction effect (t-value = −1.5076; p-value = 0.1323). There was thus no support for Hypothesis 3.

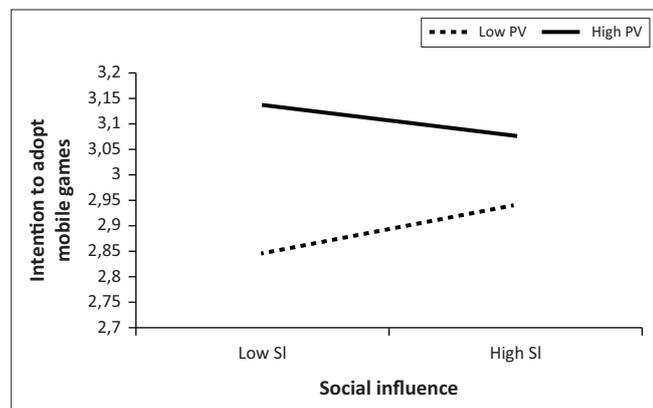### Hypothesis 4 (social gameplay motivator)

The results (Table 2) of the moderating effect of perceived value of information disclosure on the relationship between social influence and intention to play mobile games showed support for Hypothesis 4 (t-value = -2.1647; p-value = 0.0309). This means that the value levels that gamers perceive in disclosing their information (PV) affect the relationship between the social influence from others (SI) and their intention to play mobile games (INT).

TABLE 2: Summary of moderation interaction effects.

Relationship	Interaction effect [LLCI; ULCI]	SE	*T*	*P*
Moderating effect	-0.0388	0.0179 ≥	-2.1647	0.0309*
(SI*PV) -> INT	[-0.0741; -0.0036]	-	-	-
PV -> INT	0.1064	0.0305	3.41826	0.0005**
SI -> INT	0.0086	0.0308	0.2800	0.7796

Note: Statistically significant at *p < 0.05; **p < 0.001.
SI, social influence; PV, perceived value of information disclosure; INT, intention to play games; LLCI, lower limit confidence interval; ULCI, upper limit confidence interval; SE, standard error.

FIGURE 2: Simple slope analysis.

As a moderation effect was evident, the interaction effect was further explored by means of the simple slope analysis that indicated how the relationship between social influence and intention to play mobile games change at low and high levels of perceived value of information disclosure (Figure 2).

The results of the moderation show that the positive effect of social influence on the intention to play mobile games is weaker at higher levels of perceived value of information disclosure. Conversely, the positive effect of social influence on the intention to play mobile games is stronger at lower levels of perceived value of information disclosure. This finding suggests that when gamers believe there is value in disclosing their information, the effect that other people have on whether they should play the mobile game becomes weaker. Alternatively, when gamers do not believe that there is value in disclosing their information for this particular game, the effect that other people have on whether they should play the mobile game becomes stronger. This finding highlights the importance for marketers to offer value to gamers (e.g., matching gamers with similar skills) in exchange for the disclosure of their personal information, as this will offset the influence of other players.

Discussion and implications

The purpose of this study was to explore the moderating effect of perceived value of information disclosure on the relationship between mobile gaming motivators (escapism, fantasy, achievement, social influence) and the intention to play mobile games. The growth of the mobile gaming industry warrants the need to understand the role of perceived value of information disclosure, especially given that game enthusiasts have to sign up for their preferred mobile games.

Personal gameplay motivators (no moderating effect)

Perceived value of information disclosure had no moderating effect on the relationships between personal gameplay motivators (escapism, fantasy and achievement) and the intention to play mobile games. These findings suggest that when a mobile game is played to escape from the pressures of everyday life or to fulfil the need to be transported to a fantasy world, or to offer players the opportunity to accomplish challenging tasks, these play decisions are not strengthened or weakened by the perceived value of information disclosure.

To achieve the need for escapism and fantasy, game developers can design mobile games that help players escape into imaginary worlds to accomplish tasks they would not do in their normal lives. As fantasy and escapism significantly reduce stress (Prinsen & Schofield 2021), it seems as if privacy concerns regarding disclosure of personal information would be mitigated. Thus, if game developers and marketers emphasise the benefits of escapism and fantasy offered by certain mobile games, it may offset the resistance to disclose information. This may allow game developers and marketers to collect personal information from players to improve multiplayer gaming such as matching players in similar time zones or offer better-targeted in-game advertising (Big Data News 2022).

In terms of achievement, the findings indicate that mobile games that appeal to the player's need or ability to accomplish challenging tasks will drive intention to play mobile games, irrespective of whether the perceived value of information disclosure is low (or high). This means that the perceived value of information disclosure does not strengthen or weaken the relationship between achievement and intention to play mobile games. Consequently, game developers and marketers can continue to create activities within games that will address players' achievement needs. Addressing this need for achievement can include games that promote leader boards that rank players according to their relative success. This can be done by offering tournaments or challenges that can be enhanced by creating tiers where players can progress, and as the difficulty level increases, the prizes become more profound (Sailer et al. 2017).

To gain market share in a competitive mobile game market, mobile game designers could focus on offering opportunities for the player to experience achievement, escapism or fantasy as these gameplay decisions are not strengthened or weakened by the perceived value of disclosure of information. Marketers can also communicate these personal game motivators to drive mobile game adoption irrespective of required information disclosure.

Social gameplay motivators (moderating effect)

Contrary to the non-moderating effect on personal gameplay motivators, the perceived value of information disclosure

had a significant moderating effect on the relationship between the one social gameplay motivator of social influence and the intention to play mobile games. More specifically, this relationship changes at low versus high levels of perceived value of information disclosure. This is a very telling finding in that some gamers (those with low levels of perceived value of information disclosure) seem to be influenced by other gamers when they share game experiences in these virtual communities (Lee 2019; Sailer et al. 2017), rather than by marketers. From the slope analysis, it is evident that when the level of perceived value of information disclosure is low, this positive relationship between the influence of fellow gamers and one's intention to play mobile games increases. This implies that gamers who believe they will get little value from disclosing their information will listen to other players in terms of game value rather than to marketers to make the decision on whether to play the mobile game or not. Gamers thus seem to consider the opinions of gaming peers when they feel that they may not receive sufficient value when signing up to play a game. Perhaps marketers can support these gamers by offering games that can be accessed via social media platforms (such as Facebook and WeChat) where personal information is already stored (Sun et al. 2019).

When the level of perceived value of information disclosure is high, the positive relationship between the influence of one's fellow gamers on the game adoption weakens. This should be very important to game developers and marketers because the value received will weaken the influence of gaming peers, despite the fact that we know that gamers influence one another (Global Web Index 2020). In short, it seems as if gamers rely less on the opinions of their peers when they believe they get sufficient value from the game, which puts the control back onto marketers to influence these gamers. Perhaps this finding also highlights the fact that many mobile games can be played independently without seeking out closer connection with other gamers. Thus, the more benefits the players enjoy from the mobile game, the less the influence of the significant others to play that game. It appears as if some players use gaming not only to escape to new worlds but also to escape from other people. Another take on this may be because of the association of social influence with excessive gameplay, which can lead to undesirable addiction behaviours (Cheah et al. 2022). A final tenable explanation for this finding could be that players are intelligent enough to identify their own needs and to choose games that satisfy their personal needs (Laor 2020) to suggest that social influence is mitigated once the perceived value of information disclosure becomes high.

Limitations and suggestions for future research

The data were collected from two continents only, namely Asia and Africa, and because of the non-probability purposive sampling, it does not allow generalisation to other continents. In future, studies could employ a quota sampling technique to improve the representation of particular gaming groups within a population. Furthermore, extending the study to other continents could widen the gamer sample to confirm the role of perceived value of information disclosure. Future studies could thus consider comparing gamers across continents or countries to determine if there are different views regarding how different levels of perceived value of information disclosure affect relationships between gameplay motivators and the intention to play mobile games. The finding that the relationship between social influence and intention to play mobile games weakens when the perceived value of information disclosure is high may lead one to speculate whether some players would prefer to have fewer connections with other players because many mobile games can be played independently without seeking out closer connection with other gamers. Future studies could therefore investigate the role of gaming peers in more detail. Considering the different category types of mobile games available (e.g., action, adventure, casual, racing, simulation and strategy), it may be worthwhile for future studies to focus on a specific game category, such as fantasy casual games, because the drivers for playing a type of mobile game may differ. Also, some mobile games are free to play and some are not, which may influence the drivers for mobile game adoption, and could be considered separately in future studies. Future studies can perhaps validate the escapism and fantasy constructs that had low AVEs in this study, by either adding more items or engaging in scale development to ensure that only parsimonious, functional and internally consistent items are included, as suggested by Tay and Jebb (2017). A finding by Cullen and Kabanda (2018) reported that males engaged more in m-commerce entertainment activities such as playing games online through their mobile devices. This study sample included more male than female respondents. Future research could confirm if this trend is global and whether gender moderates the relationship between mobile gaming motivators and mobile game adoption.

Conclusion

Driven by their growing mobile gaming markets, Asia and Africa will continue to play a role on the global stage of mobile gaming. A conceptual framework for exploring the moderating role of perceived value of information disclosure on the relationship between the intention to play mobile games and motivating factors of fantasy, escapism, achievement and social influence was proposed and empirically tested through the lens of the expectancy-value theory. The findings of the study indicate that mobile players seem to enjoy gameplay experiences that fulfil the needs to escape, fantasise or achieve, irrespective of whether they perceive any value from disclosing their information when signing up to play the game. It therefore seems as if the challenge for gaming companies is not to convince players to disclose their information but rather to design games that fulfil their personal needs. This is, however, not the case for the relationship between social influence and intention to play mobile games because this relationship is impacted by high or low levels of perceived value of information disclosure. For those gamers with low perceived value levels, marketers could utilise their personal

details already stored on various social media platforms to access games. For those gamers with high perceived value levels, marketers need to capitalise on the fact that players value the benefits offered by the mobile game, more so than the opinions of their gaming peers.

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Competing interests

Authors' contributions

Both authors, Y.J. and M.H., contributed conceptually and methodologically to this study and were involved in the analysis, writing, reviewing and editing of the manuscript.

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Data availability

Data are available upon request from the corresponding author Y.J.

Disclaimer

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