

## The Mediating Role of Loyalty Between Gaming Addiction and the Intention to Purchase Online Mobile Apps

<sup>1\*</sup>Wassil Elanguoud

ORCID: <https://orcid.org/0009-0007-7289-8402>

<sup>2</sup>Ilham Elharaoui

ORCID: <https://orcid.org/0000-0002-5962-6409>

<sup>3</sup>Youssef Khatori

ORCID: <https://orcid.org/0000-0001-9587-5106>

<sup>4</sup>Mohammed Aqqaoui

ORCID: <https://orcid.org/0009-0006-0643-7723>

<sup>1,2,3,4</sup>Faculty of Economics and Management, Laboratory of Economics and Organizations Management, Ibn Tofail University, Kenitra, Morocco

\*Corresponding author email: [Wassil.elanguoud@uit.ac.ma](mailto:Wassil.elanguoud@uit.ac.ma)

### Abstract

**Background:** Game developers' revenue greatly relies on in-game purchases, which are influenced by consumer experience, lifestyle, and perceived risk. Nevertheless, the increasing prevalence of addiction to online mobile gaming has raised concerns about how it could affect player behaviour and the market as a whole.

**Objectives:** The study's main aim is to identify the relationship between online mobile gaming addiction and its effects on the purchase intentions and loyalty of Moroccan university students.

**Methodology:** A 5-point Likert scale survey instrument was used to collect data from 189 Moroccan students at Ibn Tofail University. SPSS Statistics 24 and Smart PLS were used for data analysis. A two-stage structural equation modelling approach was employed to test both direct and indirect effects and to validate the proposed hypotheses. Additionally, a MANOVA test was conducted to determine whether there was a difference in addiction levels between male and female respondents.

**Results:** The results show a significant positive relationship between addiction and players' loyalty in playing online mobile games. Furthermore, addiction was found to influence the intention to purchase in-game mobile applications positively.

**Conclusion:** The findings highlight the importance of balancing engagement strategies with ethical considerations in the digital gaming industry. While customer retention is critical, ethical concerns regarding the potential exploitation of addiction to maximise purchase intentions must be addressed.

**Unique Contribution:** This paper contributes to understanding the dynamics of online mobile gaming addiction and its influence on consumer behaviour, particularly in the context of Moroccan university students. While it addresses the ethical considerations associated with this industry, this paper fills a gap in the literature on this topic.

**Key Recommendations:** Game developers and operators should develop responsible practices to avoid exploiting addiction for increased purchase intentions. Moreover, the digital gaming sector must implement responsible guidelines and practices to balance engagement strategies with ethics.

**Keywords:** Gaming addiction, Consumer loyalty, In-game purchases, Online mobile gaming

## Introduction

The popularity of online gaming has skyrocketed like never before, captivating millions of players around the globe. It has also contributed to a disruptive transformation of the digital entertainment landscape. As the image of online games continues to grow, researchers have focused on understanding the underlying psychological processes that shape the player's attitude and behaviour within these virtual environments. Examining player loyalty to digital gaming addiction and purchase intentions regarding mobile features became the centre point of inquiry. On top of carrying profound implications for individuals and the gaming industry, loyalty towards online games encompasses the emotional attachment, commitment, and positive attitude players demonstrate toward a specific online game. It supports the connection and identification to the game, leading to sustainable engagement and reinforcement in the gaming community. Literature has identified factors such as game satisfaction, enjoyment, social interaction, and perceived value as influential drivers of game loyalty (Khang et al., 2013).

Understanding the nature of game loyalty is of great importance for developers and marketers, as it directly impacts player retention, word-of-mouth promotion, and the financial success of online games. Simultaneously, gaming addiction has emerged as a pressing concern within the context of online gaming. Gaming addiction refers to excessive and compulsive engagement with online games, resulting in adverse consequences and a loss of control over gaming behaviour (Griffiths, 2005). It is characterised by symptoms such as preoccupation with gaming, withdrawal symptoms when not playing, and persistent gaming despite negative outcomes. Extensive research has examined the contributing factors to gaming addiction, including social interaction, escapism, reward mechanisms, and psychological needs (Kuss & Griffiths, 2017).

To the author's knowledge, prior research has been limited by exploring exclusively the positive relationship between online gaming and loyalty. Choi and Kim (2004) introduced a theoretical framework integrating customer loyalty with flow and social/personal interactions. Based on a survey of 1993 users, the results indicated that players are inclined to remain loyal to online games when they encounter positive experiences, such as enjoyable social interactions. In a study by Wang and Lu (2008) involving 1186 video game players, researchers demonstrated how online game addiction influenced the connection between satisfaction and loyalty. Their findings revealed that addiction has a direct effect on loyalty and can diminish the connection between satisfaction and loyalty. This sheds light on why players may exhibit loyalty even when their satisfaction levels are not fully met. Additionally, (Balakrishnan & Griffiths, 2018) that addiction can drive users to purchase in-game apps. This creates a dilemma for game developers, who must balance social responsibility with profit margins.

There is still a gap in research regarding addiction and loyalty that manipulate players' intentions to make in-game purchases on mobile platforms. Addressing this gap could provide valuable insights, helping to inform future research directions and practical strategies for game development and marketing. Thus, the present study investigates the relationship between addiction, loyalty, and purchase intention in online gaming to understand player behaviours and preferences better. This research aims to reveal how loyalty can affect the impact of addiction on players' intentions to buy in-game items, thereby exploring how loyalty influences consumer behaviour in gaming.

## **Conceptual framework**

### **Online mobile game addiction and game loyalty**

Fields like psychiatry, education, social psychology, information systems, and gaming have all taken a keen interest in Online Game Addiction (OGA) (Zhu et al., 2015). For instance, studies show that OGA can lead to comorbidities, including anxiety, sadness, and social phobias, in addition to problematic interactions at school with friends and family (Wang et al., 2021). Studies concentrating on OGA's antecedents investigate elements such as social support, family dynamics, life experiences, and psychological traits (Tone et al., 2014). Notably, psychosocial vulnerabilities, including depression and low self-esteem, particular personality traits like shyness and reliance, and poor parent-child connections, have all been associated with increased susceptibility to OGA. The motivations behind gaming actions have also significantly influenced the latter, including psychological concepts like psychological ownership (Zhu et al., 2015).

On the other hand, studies on the aftereffects of OGA highlight the negative impacts it has on people's lives in the social, psychological, and academic spheres (Wang et al., 2021). From a psychological perspective, OGA has been associated with addiction-related components such as salience, tolerance, mood modification, relapse, withdrawal, and conflict (Griffiths, 2005). Additionally, studies highlight the intricate interplay between gaming addiction and constructs like flow, loyalty, purchase intention, and social interaction (Wang & Lu, 2008). Despite recognising OGA as a complex phenomenon with far-reaching implications, avenues for further exploration remain, particularly regarding the interplay between individual vulnerabilities, gaming motivations, and the socio-environmental context (Blinka & Mikuška, 2014). Online mobile game addiction refers to excessive and compulsive engagement with online mobile games, resulting in negative consequences and the loss of control over gaming behaviour. It is characterised by symptoms such as preoccupation with gaming, withdrawal symptoms when not playing, decreased interest in alternative activities, and persistent gaming despite negative consequences (Kuss & Griffiths, 2017).

The literature has found several key variables, including satisfaction of psychological requirements, competence, relatedness, autonomy, pleasure, social interaction, achievement, and completion of gaming tasks (Teng & Yue, 2023). Škařupová and Blinka (2015) found that social capital gained from teamwork and adhering to norms has a major role in enhancing players' sense of loyalty and belonging to the game. Notably, there is a research gap on the potential impact of knowledge building in team gameplay, even though previous studies have mostly focused on psychological fulfilment as a prelude to loyalty. As evidence of the dynamic nature of this field of study, examining how social capital and knowledge exchange interact to influence player loyalty offers a direction for future research (Teng & Yue, 2023). In conclusion, the research on online game addiction and loyalty emphasises the complex interactions between personal traits, gaming incentives, societal factors, and mental well-being. Although tremendous progress has been made in comprehending the causes and effects of OGA and the factors influencing gamer loyalty, more research is still required to fully understand the complex mechanisms underlying these phenomena and develop successful digital-age intervention tactics. Contrarily, game loyalty refers to a person's

dedication, devotion, and positive outlook towards a particular online mobile game. In order to participate in and support the game going forward, one must have a deep emotional connection to it and identify with it. According to Chang and Hsu (2019), some characteristics, such as perceived value, social engagement within the gaming community, and game satisfaction and enjoyment, impact game loyalty. A strong attachment, dedication, and positive attitude towards a game are common to make gamers obsessed.

### Intention to Buy Online Mobile In-game Applications and Features

The desire or willingness to pay for more in-game features or material indicates the intention to acquire features. Virtual currency, character customisation possibilities, powerups, and access to special game material are a few examples of what this might offer. According to Huang et al. (2018), the perceived value, considered advantages of in-game purchases, perceived exclusivity or scarcity of the material, and the person's financial capacity all affect their intention to buy. Incorporating gamification services into mobile internet gaming has been recognised as a powerful catalyst for generating psychological reactions, impacting particular behavioural consequences (Huotari & Hamari, 2017). According to Helme Falk and Marcusson (2019), scholars have emphasised the importance of this factor in influencing consumer perceptions, purchase behaviour, and engagement with brand experiences. Research indicates that by promoting emotional and social ties, product gamification aspects might favour consumer purchase behaviour. In addition, gamification techniques have been linked to better marketing results, as demonstrated by increasing consumer curiosity and brand recognition (Balakrishnan & Griffiths, 2018). Simultaneously, investigations concerning the correlation between addiction and inclination acquire significant perspectives. Although there has been more research on the connection between addiction and purchase intention in a variety of contexts, there has not been much empirical research done on online game addiction (Weinstein et al., 2016). Still, some sectors did produce empirical solid evidence supporting the relationship between purchase intention and loyalty to mobile gameplay (Duroy et al., 2014). When addiction and loyalty are coupled, loyalty becomes a strong predictor of intention to buy, especially when it comes to in-game purchases made on mobile devices through the internet.

Based on extant research findings, this study formulates a hypothesis model, as demonstrated in Figure 1.

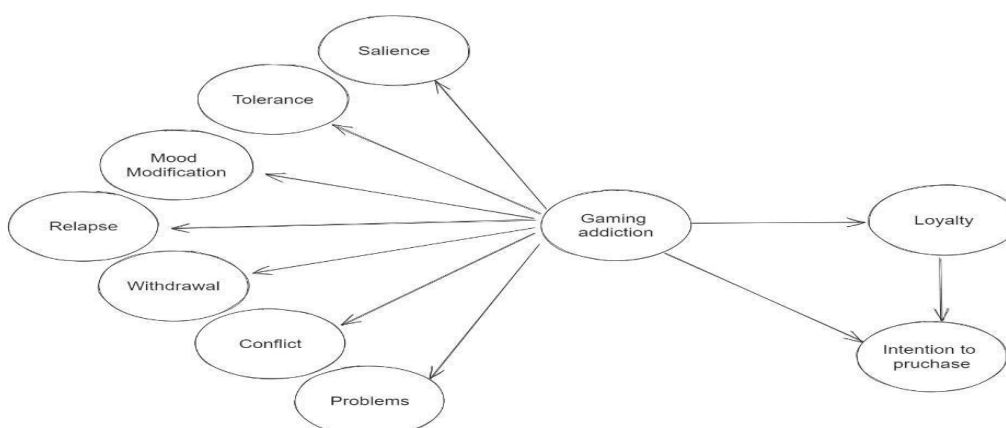


Figure 1: Conceptual Framework

**H1:** Higher online mobile game addiction levels will be positively influenced by greater game loyalty.

**H2:** A higher intention to purchase features for online mobile gaming will positively influence increased game loyalty.

**H3:** Higher levels of game addiction will lead to greater game loyalty, resulting in higher intention to purchase in-game applications and features.

## **Methodology**

The methodology was presented with the use of the following segment:

### **Design of the study**

The research aimed to investigate the relationship between mobile game addiction, loyalty, and purchase intention among university students. It employed an online survey method, collecting primary data to analyse, explain, or describe an issue.

### **Population of the study**

The study involved students from one of the most prestigious universities in Morocco. This demographic sample was chosen based on prior research indicating that students are a suitable population for studies on mobile games due to their high level of engagement.

### **Sample size and sampling technique**

The research included 189 students from Ibn Tofail University in Kenitra, selected through a convenience sampling method. The questionnaire was carried out online using Google Forms, and the survey link was sent out through the university's official email addresses to ensure that respondents from all fields and academic levels had access. This method enabled a wide range of students to be included, improving the overall applicability of the results. The sample size, including 189 participants, aligns with the suggested requirements for structural equation modelling (SEM), which advises having 100 to 200 samples or a minimum of 10 cases per variable to ensure statistical solid power and reliability in the analysis. Moreover, the nearly equal number of male and female participants contributes to a balanced representation, strengthening the credibility and accuracy of the study findings.

### **Research instrument**

The instrumentation evoked a survey of 28 items, rated on a 5-point Likert scale. Such measurements aim to find data that construct loyalty and purchase intention scaled from 1 = strongly disagree to 5 = strongly agree. A sub-scale to measure the addiction ranged from 5 = very often to 1 = never. The questionnaire collected demographic information such as gender, age, education level, favourite game category, time spent on games per day and the number of purchases in the past year. Current research adapted measurements of mobile game addiction, loyalty, and purchase intention from the previous literature. Addiction was measured using a components model developed by (Griffiths, 2005). This model had six components: salience, tolerance, mood modification, relapse, withdrawal, and conflict. A seventh component related to the dimension of 'problems' was added.

In the current research, the structure of addiction was explored in terms of the seven components,

each represented by three items. In the present research, a two-item loyalty scale was adopted from the study of Choi and Kim (2004). This study adopted a five-item purchase intention scale, drawn from an earlier research (Hsu & Lin, 2015).

### Data analysis

A two-stage structural equation modelling approach was employed to test both direct and indirect effects and to validate the proposed hypothesis. Additionally, a MANOVA test was conducted to determine whether there were differences in addiction levels between male and female respondents.

### Results

#### Confirmatory Factor Analysis

The result of both the Confirmatory Factor Analysis and the Squared Inter-Correlation provides relevant information about the validity and reliability of the measurement model (Sarstedt & Ringle, 2021). This improves the understanding of relationships between variables.

Regarding reliability, the Cronbach alpha, together with the composite reliability in Table 1, demonstrates adequate to good internal consistency for all constructs (Sarstedt & Ringle, 2021). These variables' results indicated a reliability coefficient greater than 0.70, showing that the measured scales have been free from error. All items from each model variable reported values greater than 0.60, which was significant to a 99% confidence interval and satisfied the boundary for content validity from the confirmatory factor analysis. The AVE values for the constructs were also greater than 0.50, indicating that convergent validity had been met.

**Table 1: Evaluation of the Measuring Model**

Component	Items	Mean	SD	Cronbach's Alpha	CR	Rho	AVE
Salience	SL1	2.61	1.275	0.827	0.832	0.896	0.742
	SL2	2.82	1.044				
	SL3	2.81	1.153				
Tolerance	TC1	3.01	1.086	0.839	0.845	0.903	0.757
	TC2	2.80	1.085				
	TC3	2.74	1.248				
Mood Modification	MM1	2.48	1.254	0.807	0.827	0.885	0.721
	MM2	2.98	1.171				
	MM3	2.81	1.183				
Relapse	RE1	2.51	1.220	0.887	0.892	0.930	0.816
	RE2	2.55	1.219				
	RE3	2.39	1.219				
Withdrawal	WL1	2.32	1.271	0.928	0.930	0.954	0.874
	WL2	2.18	1.199				
	WL3	2.16	1.195				
Conflict	CF1	2.29	1.249	0.896	0.903	0.935	0.827
	CF2	2.42	1.239				
	CF3	2.19	1.207				

Problems	PS1	2.57	1.226	0.827	0.844	0.896	0.743
	PS2	2.33	1.200				
	PS3	2.50	1.279				
Loyalty	LY1	3.46	1.211	0.832	0.834	0.922	0.855
	LY2	3.51	1.067				
Purchase Intention	PI1	2.82	1.297	0.935	0.938	0.951	0.795
	PI2	2.73	1.220				
	PI3	2.72	1.221				
	PI4	2.60	1.229				
	PI5	2.48	1.250				

Model Fit Indices: SRMR = 0.061;  $d_U LS = 1,628$ ;  $d_G = 1.143$ ;  $NFI = 0.76$

Table 2 presents the average variance extracted values, which leverage the amount of variance in each construct as captured by their items. Generally, a higher AVE value indicates the strong representation of items by latent variables. The construct "purchase intention" (PI) has an AVE of 0.795; this suggests that its items account for 79.5% of the variance in this construct. (Balakrishnan & Griffiths, 2018) That means items measuring purchase intention are well representative of the construct. The score for purchase intention and loyalty was higher than their squared inter-correlation values, meeting the criteria for discriminant validity. The remaining sub-components displayed strong correlations with each other, which is expected, as they are part of the same latent concept.

**Table 2: Inter-construct Correlation outcome**

	CO	MM	FI	IA	PR	RE	SAL	WT	TOL
CO	0.910								
MM	0.597	0.850							
FI	0.222	0.446	0.925						
IA	0.543	0.490	0.254	0.891					
PR	0.756	0.491	0.286	0.434	0.862				
RE	0.759	0.694	0.297	0.586	0.751	0.903			
SAL	0.518	0.574	0.498	0.530	0.602	0.608	0.861		
WT	0.731	0.561	0.294	0.533	0.705	0.746	0.520	0.935	
TOL	0.640	0.603	0.498	0.549	0.738	0.728	0.792	0.649	0.869

<sup>v</sup>The diagonal values represent AVE.

### Hypothetical Model

The aforementioned Tables 3 and 4 provided clear insight into the analysis's results, ranging from total effects to indirect effects of the model. All hypotheses from H1 to H3 were supported.

Table 3 presents the full effects of the model. Significant total effects mean that the variables are strongly influencing each other. For example, the impact of addiction on loyalty H1, with a coefficient of 0.235 ( $p < 0.001$ ), indicates a highly significant relationship between addiction and loyalty. Similarly, the H2 effect from addiction to purchase intention has a coefficient of 0.418 ( $p < 0.001$ ), which is strongly significant. Moreover, the effect of loyalty to purchase intention, H3, has a coefficient of 0.156 ( $p = 0.033$ ), which once again signifies that loyalty to mobile gaming has a high

impact on the intention to make purchases.

**Table 3: Test of Hypotheses**

Hypothesis	Original Sample	Mean	(SD)	T Student	P Values
ADD → LY (H1)	0.235	0.236	0.065	3.589	0.001
ADD → PI (H2)	0.418	0.420	0.072	5.846	0.001
LY → PI (H3)	0.156	0.156	0.073	2.138	0.033

Bootstrap: 5000 samples at 95% confidence level.

Table 4 demonstrates the indirect effects of the model. The indirect effect from addiction to purchase intention through loyalty indicates a coefficient of 0.037 ( $p = 0.011$ ). This result suggests that the relationship between addiction towards online mobile games and intention to purchase mobile in-app features is partially mediated by loyalty exhibited in regard to online mobile games, implying that loyalty plays a mediating role in the association between addiction and purchase intention.

These results were obtained through bootstrap analysis with 5000 samples at a 95% confidence level. Bootstrap analysis helps assess the robustness and validity of the effects.

**Table 4: Indirect Effects Test**

Indirect Path	Original Sample	Mean	SD	T Student	P Values
ADD → LY → PI	0.214	0.214	0.078	2.764	0.006

The ANOVA test examines the differences between groups, while the Bonferroni test allows for pairwise comparisons. Table 5 shows that the variable purchase intention is statistically significant at a 95% confidence level difference between groups. The variable "Purchase intention" has an F-value of 2.794 ( $p = 0.096$ ), indicating a marginally significant difference.

**Table 5: Multivariate ANOVA for Male and Female Comparison**

Source	Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Square
SL	0.984	1	0.984	0.985	0.322	0.005
TC	0.342	1	0.342	0.346	0.557	0.002
MM	2.763	1	2.763	2.662	0.104	0.014
RE	0.261	1	0.261	0.213	0.645	0.001
WL	0.002	1	0.002	0.002	0.966	0.001
CF	0.238	1	0.238	0.188	0.665	0.001
PS	0.205	1	0.205	0.180	0.672	0.001
LY	0.515	1	0.515	0.460	0.498	0.002
PI	3.414	1	3.414	2.794	0.096	0.015

Bootstrap: 5000 samples at 95% confidence level.



Moving to Table 6, the Bonferroni test reveals specific pairwise comparisons between groups. For instance, the comparison between "Male" and "Female" in the variable "PI" shows a mean difference of 0.269 ( $p = 0.096$ ), which is statistically significant at a 90% level of confidence. However, the other variables' mean differences are statistically insignificant at a 95% or 90% confidence level. This indicates no significant difference in the other variables between males and females.

**Table 6: Bonferroni comparison test**

Variable	(I) Gender	(J) Gender	MD	SE	Sig	95% CI	
						LB	UB
Salience	Male	Female	0.144	0.146	0.322	-0.143	0.432
	Female	Male	-0.144	0.146	0.322	-0.432	0.143
Tolerance	Male	Female	0.085	0.145	0.557	-0.200	0.371
	Female	Male	-0.085	0.145	0.557	-0.371	0.200
Mood Modification	Male	Female	-0.242	0.148	0.104	-0.535	0.051
	Female	Male	0.242	0.148	0.104	-0.051	0.535
Relapse	Male	Female	-0.074	0.161	0.645	-0.392	0.243
	Female	Male	0.074	0.161	0.645	-0.243	0.392
Withdrawal	Male	Female	-0.007	0.167	0.966	-0.337	0.323
	Female	Male	0.007	0.167	0.966	-0.323	0.337
Conflict	Male	Female	-0.071	0.164	0.665	-0.394	0.252
	Female	Male	0.071	0.164	0.665	-0.252	0.394
Problems	Male	Female	-0.066	0.156	0.672	-0.373	0.241
	Female	Male	0.066	0.156	0.672	-0.241	0.373
Loyalty	Male	Female	-0.105	0.154	0.498	-0.409	0.200
	Female	Male	0.105	0.154	0.498	-0.200	0.409
Purchase Intention	Male	Female	0.269	0.161	0.096	-0.048	0.587
	Female	Male	-0.269	0.161	0.096	-0.587	0.048

## Discussion

The present research explores the triangular relationship between addiction, loyalty to online games, and the intention to acquire in-game apps for online mobile platforms. It scrutinised the connections and consequences of these variables, particularly investigating the total, direct, and indirect impacts of addiction on purchasing intentions, with loyalty serving as a mediator. Employing a total effects model, this study delved into the associations between online mobile game addiction, loyalty, and the desire to acquire in-game apps for mobile platforms. This further concurred with the fact that loyalty towards the online mobile game positively influenced the intention to purchase in-game online mobile apps. Interestingly, instead of having a direct effectual relationship between the former and the latter, our results showed that loyalty creates a significant mediating effect that substantially indirectly impacts the intent to purchase. This is consistent with Choi and Kim (2004) assertion that players remain loyal to games when they experience enjoyable social interactions, which enhance emotional attachment and reinforce commitment to the game.

Therefore, this study seeks to determine how the purchase intention (PI) for the in-game apps relates to the users' online mobile gaming addiction. First, the measurement model analysis shows that it established the construct validity and reliability of addiction. The Cronbach's alpha coefficient and the composite reliability scores revealed the internal consistency and reliability scores of mobile online gaming addiction measurement. The AVE proved to be high by exceeding the expected threshold, indicating strong convergent validity. Given the above results, the measurement model of addiction could best be considered valid and reliable. Moreover, as a result of the impact, there existed a strong positive relationship between online mobile gaming addiction (ADD) and the purchase intention (PI) for in-app applications. This implies that when people are highly addicted to mobile internet gaming, they are also more likely to need to purchase in-app games. These findings are in line with other researchers' findings that addiction would determine the purchase of the related in-app features and, consequently, the purchase decisions. The addictive nature of online games might stimulate players to spend more money on in-game applications, impacting purchase intention. Besides, the indirect effect analysis showed a significant indirect influence of online mobile gaming addiction on purchase intention mediated through loyalty, corroborating findings from (Wang & Lu, 2008) that addiction can diminish the connection between satisfaction and loyalty. It proves that the link between purchase intentions and addiction is mediated through loyalty to the game. Addicts to mobile internet gaming can establish high loyalty, thereby influencing them to make in-app purchase decisions. The role played by loyalty is consistent with previous studies, which stipulated an influence on loyalty for consumer behaviour and purchasing decisions (Balakrishnan & Griffiths, 2018).

The analysis's implications show that loyalty influences buying intentions in-app. As per the positive relationship between loyalty and buying intention, gamers are likelier to make extra app transactions. This also results from the confidence, contentment, and previous satisfying gaming experiences that encourage the player's loyalty to purchase more in-game content. The loyalty construct showed good reliability and validity, whereby the measurement model showed the following Cronbach's alpha coefficient values in capturing the internal consistency and reliability of the loyalty items and the composite reliability values. The measures above displayed proper convergent validity in the AVE, which exhibited levels above the expected threshold. These findings provide confidence in both the validity and consistency of the loyalty measure used within this study. The results confirm other findings that prove how loyalty shapes the behaviour of consumers and purchasing intentions within the gaming industry. (Khang et al., 2013) state how loyalty is closely tied to players' emotional attachment and commitment, significantly impacting their decisions to engage in in-game purchases.

## **Conclusion and recommendations**

The present research corroborates the fact that the players' loyalty significantly contributes to more involvement and spending in online mobile gaming. Loyal players invest more time and money in the games that they perceive as highly valuable and satisfying. These findings support the study that established a positive relationship between loyalty, continued use, word-of-mouth advertising, and repetitive use of game applications (Huang et al., 2018). In this respect, to boost intentions towards in-game purchasing, developers and marketers would find advanced insights from the dimension of how loyalty affects players' behavioural attitudes to be relevant. This can be done by building personalised experiences, allowing social interactions within the games, offering rewards, and updating new exciting content in the games regularly. However, a distinction has to be drawn between what constitutes building actual loyalty and what contributes to addictive behaviours as business stimulants. This research underlines the ethical commitment of game developers and marketers to focus on sustainable engagement methodologies and not on those that may result in addictive behaviours, possibly leading to adverse outcomes for gamers.

This study's distinctive contribution is based on empirical evidence that demonstrates loyalty acts as a considerable mediator in the relationship between gaming addiction and purchase intentions. This relation is not always marked by direct effects but also by indirect ones that are still scholarly and underexplored. This revelation offers a new perspective on how addictive behaviours could have a collateral effect on consumer purchasing decisions by fostering brand loyalty. While designers may be attracted to designing addictive features to increase revenues, the ethical implications for such strategies should be debated and weighed.

Future studies should be done on how cultural norms and values influence the engagement and loyalty of players in online mobile gaming. Cross-cultural studies may contribute significantly to understanding universal factors and those dependent on context, influencing players' behaviour. Moreover, experimental methods could further clarify causal relationships between gaming addiction, loyalty, and purchasing intent. After all, collaboration between scholars and industry professionals should be strengthened to translate such findings into effective, ethical strategies that best serve the interests of gamers and developers alike.

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### **Transparency**

The authors affirm that the manuscript provides an honest, accurate, and transparent representation of the study. They assure that no crucial aspects of the research have been overlooked and any deviations from the planned study are duly addressed. Furthermore, the study adhered to all ethical standards throughout the writing process.

### **References**

- Balakrishnan, J., & Griffiths, M. D. (2018). Loyalty towards online games, gaming addiction, and purchase intention towards online mobile in-game features. *Computers in Human Behavior*, 87, 238-246. <https://doi.org/10.1016/j.chb.2018.06.002>
- Blinka, L., & Mikuška, J. (2014). The role of social motivation and sociability of gamers in online game addiction. *Cyberpsychology: Journal of Psychosocial Research on Cyberspace*, 8(2), article 6. doi: 10.5817/CP2014-2-6
- Chang, K.-C., & Hsu, C.-L. (2019). How a branded website creates customer purchase intentions. *Total Quality Management & Business Excellence*, 30(3-4), 422-446. <https://doi.org/10.1080/14783363.2017.1308819>
- Choi, D., & Kim, J. (2004). Why people continue to play online games: In search of critical design factors to increase customer loyalty to online contents. *CyberPsychology & behavior*, 7(1), 11-24. <https://doi.org/10.1089/109493104322820066>
- Duroy, D., Gorse, P., & Lejoyeux, M. (2014). Characteristics of online compulsive buying in Parisian students. *Addictive Behaviors*, 39(12), 1827-1830. doi: 10.1016/j.addbeh.2014.07.028
- Griffiths, M. (2005). A 'components' model of addiction within a biopsychosocial framework. *Journal of Substance use*, 10(4), 191-197. <https://doi.org/10.1080/14659890500114359>
- Helmefalk, M., & Marcusson, L. (2019). Gamification in a servicescape context: a conceptual framework. *International Journal of Internet Marketing and Advertising*, 13(1), 22-46.

<https://doi.org/10.1504/IJIMA.2019.097894>

- Hsu, C. L., & Lin, J. C. C. (2015). What drives purchase intention for paid mobile apps? – An expectation confirmation model with perceived value. *Electronic Commerce Research and Applications*, 14(1), 46-57. <https://doi.org/10.1016/j.elerap.2014.11.003>
- Huang, H. C., Cheng, T.C.E., Huang, W. F., & Teng, C. I. (2018). Impact of online gamers' personality traits on interdependence, network convergence, and continuance intention: Perspective of social exchange theory. *International Journal of Information Management*, 38(1), 232-242. <https://doi.org/10.1016/j.ijinfomgt.2017.08.009>
- Huotari, K., & Hamari, J. (2017). A definition for gamification: anchoring gamification in the service marketing literature. *Electronic Markets*, 27, 21-31. doi : 10.1007/s12525-015-0212-z
- Khang, H., Kim, J. K., & Kim, Y. (2013). Self-traits and motivations as antecedents of digital media flow and addiction: The Internet, mobile phones, and video games. *Computers in Human Behavior*, 29(6), 2416-2424. <https://doi.org/10.1016/j.chb.2013.05.027>
- Kuss, D. J., & Griffiths, M. D. (2017). Social networking sites and addiction: Ten lessons learned. *International journal of environmental research and public health*, 14(3), 311. <https://doi.org/10.3390/ijerph14030311>
- Sarstedt, M., & Ringle, C. M. (2021). Partial Least Squares Structural Equation Modeling. *Handbook of Market Research*, 587-632. [https://doi.org/10.1007/978-3-319-57413-4\\_15](https://doi.org/10.1007/978-3-319-57413-4_15)
- Škařupová, K., & Blinka, L. (2015). Interpersonal dependency and online gaming addiction. *Journal of Behavioral Addictions*, 5(1), 108-114. <https://doi.org/10.1556/2006.5.2016.002>
- Wang, S., & Lu, H. P. (2008). The role of Internet addiction in online game loyalty: an exploratory study. *Internet Research*, 18(5), 499-519. doi :10.1108/10662240810912756
- Wang, X., Abdelhamid, M., & Sanders, G. L. (2021). Exploring the effects of psychological ownership, gaming motivations, and primary/secondary control on online game addiction. *Decision Support Systems*, 144, 113512. <https://doi.org/10.1016/j.dss.2021.113512>
- Weinstein, A., Maraz, A., Griffiths, M. D., Lejoyeux, M., & Demetrovics, Z. (2016). Compulsive Buying—Features and Characteristics of Addiction. *Neuropathology of Drug Addictions and Substance Misuse*, 3, 993-1007. <https://doi.org/10.1016/B978-0-12-800634-4.00098-6>
- Zhu, J., Ding, P., Li, Q., Gao, Y., Chen, F., & Xia, G. (2015). Molecular characterisation and expression profile of methionine sulfoxide reductase gene family in maize (*Zea mays*) under abiotic stresses. *Gene*, 562(2), 159-168. <https://doi.org/10.1016/j.gene.2015.02.066>