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Research paper

Analyzing The Mediating Role of User Satisfaction between The Antecedents of Playing Online Games and User Loyalty

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Abstract

The primary objective of this study is to investigate the mediating role of user satisfaction in the relationship between the antecedents of online game playing and user loyalty. The analysis of this study was conducted using the 200 collected samples. The responses for variables are collected using a five-point Likert scaling technique. The reliability and validity of the collected samples were initially tested, followed by main tests such as regression analysis and mediation analysis. The indirect and direct effect is analyzed to find the mediating role of user satisfaction between antecedents of playing online games and user loyalty. The full mediation is found between user loyalty and the factors of cognition, socialization, and earning. Through user satisfaction, the achievement, socialization, and earning elements have an indirect mediation influence on user loyalty. Therefore, to achieve the required developments, game creators must take user reviews, feedback, and recommendations into consideration.

Keywords: *Online games; Factors; User satisfaction; User loyalty: utility theory*

1. Introduction

The revenue of the Indian online gaming market is estimated to reach $5 billion in 2025. Furthermore, online gamers will reach 186 million users. The online gaming industry is also growing as one of the inevitable sectors of the country, and India recorded about 433 million of the 846 million internet users playing online games in 2021(Murthy, 2022). Additionally, the global AI-in-online gaming market is $2.24 billion in 2024 and is predicted to grow by $2.9 billion in 2025, with continued growth anticipated through 2029. Furthermore, cloud gaming is expanding rapidly, with market size forecasts of reaching $345 billion in 2025, driven by infrastructure enhancements and 5G adoption. Virtual reality and augmented reality remain a key growth area, maintained by AI-driven practices and hardware advances(15+ Gaming Industry Trends and Statistics, Scottmax.Com, n.d.)Now the online gaming sector is also contributing to the revenue of the country. So, studying the motive for playing online games is utterly necessary. The primary intention is to find the mediating role of user satisfaction. Online game satisfaction is highly related to online game loyalty, as already proven by variables such as experiential value (utilitarian value and hedonic value), transaction cost (time and savings), and service quality (reliability, responsiveness, empathy, and assurance) (H.-E. Yang et al., 2009). Achievement, social, and escapism factors were utilized as gaming antecedents. In addition to that, psychological ownership, primary control, and secondary control were used to find their effects on online gaming addictions (Wang et al., 2021). Previous research has focused on online gaming addictions based on external factors, such as a game's features and facilities, which include the player and his or her characters, and internal factors, such as the personality characteristics of gamers (Allison et al., 2006)

Most of the previous studies have concentrated on the risks and disadvantages of online games(Kiatsakared & Chen, 2022; Zsila et al., 2022). Some studies have attempted to find the advantages of gaming, also(Hernández et al., 2022; Wati, 2020). Few studies have concentrated on motivations in different ways(Kircaburun et al., 2020; Melodia et al., 2022). But in this study, antecedents are used in order to find their effects on user loyalty through user satisfaction.

2. Literature and Hypothesis

2.1 Utility theory

Utility Theory, a foundation of microeconomics, describes consumer behavior by exploring how individuals act wisely to maximize satisfaction (utility) from existing choices (Samuelson, 2024; Varian, 2003). Utility can be described as total utility, which means the overall satisfaction achieved from consumption, or marginal utility, which means additional satisfaction derived from one more unit of consumption, with the law of diminishing marginal utility signifying that the value of repetitive experiences drops over time. This was applied in digital consumption also, where utility theory was used to analyse digital entertainment, e-commerce, and online services(Katz & Shapiro, 1985; Naidu, 2018; Shapiro & Varian, 1998), where consumer retention relies on maximizing satisfaction through multiple attributes. In relation to gaming, motivational elements such as immersion, escapism, achievement, socialization, competition, cognition, and earning will be termed as utility sources, and user satisfaction can be termed as realized utility that leads to user loyalty. However, this makes Utility Theory an appropriate foundation to understand the impact of diverse motivations on sustained gaming engagement.

2.2 Immersion in online gaming

Imagination and fantasy are components of fun games, apart from being gaming features. Especially, online games create an imaginary world, which portrays a magical world according to the player's desire (Choi et al., 2013; Schwartz, 2006; Zuo et al., 2022). At the same time, this imagination and fantasy of the gaming world will not have any impact on the real world, and the players are conscious that what they are playing is not real; it's just for fun (Garris et al., 2002). The emotional needs of the individuals are satisfied by the fantasy provided by the games. The imaginary character, which is similar to the self, was identified in the gaming field and admired by the player (Malone & Lepper, 2021). Those who are very interested in immersion are induced by the requirement of fantasy, the exploration of the gaming world, and escaping reality (Muhametjanova et al., 2025; Yee, 2006). So, H1a and H1b are used to investigate the effect of immersion on user satisfaction and loyalty.
H1a: There is a significant and positive impact of immersion on user satisfaction.
H1b: There is a significant and positive impact of immersion on user loyalty.

2.3 Achievement in online gaming

Winning games is considered an achievement only when it is recognized by the community; otherwise, it is considered less meaningful (Beltagui et al., 2019). The achievement in online games holds intrinsic value as it serves as an ego-centric reward (Martey et al., 2014). Players are motivated to win by fostering competition (Jong et al., 2012). Apart from the enjoyment factor, individuals play online games to fulfill desires and achieve accomplishments. Although achievement factors are intangible, they hold significant meaning for players (Merhi, 2016). Therefore, it is proposed that the achievement factor leads gamers to engage in online games. Based on these perspectives, we formulated the hypothesis.
H2a: There is a significant and positive impact of achievement on user satisfaction.
H2b: There is a significant and positive impact of achievement on user loyalty.

2.4 Escapism in online gaming

Escapism is also one of the motives of online gaming, in that it is said that people who are relaxing by playing online games must choose any other way to avoid gaming addiction (Wang et al., 2021). As the player finds relaxation and relief in online games by using virtual platforms ((Snodgrass et al., 2011) and feels it is easy to escape from real-life problems and responsibilities (Kardefelt-Winther, 2014; Yee, 2006), stress, anger, frustration, and relaxation are included in emotional coping, which has also been indicated as one of the motivating factors of online gaming (Wan & Chiou, 2006). Therefore, we propose that the escapism factor leads the gamer to engage in online games, and based on these arguments, the following hypothesis is framed.
H3a: There is a significant and positive impact of escapism on user satisfaction.
H3b: There is a significant and positive impact of escapism on user loyalty.

2.5 Socialization in online gaming

Maslow's hierarchy theory of needs states that collaboration and social relations among individuals will be useful to satisfy their needs and wants, and along with that, love and belonging are suggested as important needs under the social need. Social interaction between individuals will result in good engagement and promote problem-solving capacity (Hsiao et al., 2014). The social factor is associated with helping others, chatting in between, and the storyline progressing through a group effort (Muhametjanova et al., 2025; Yee, 2006). The apps and technology developed recently make it easy to promote social interactions among individuals (Yoo et al., 2018). In an organization, the focus on the importance of social interactions will lead to the generation of new ideas and knowledge development, which is possible only through cross- and intergroup interactions (Fang et al., 2010). Likewise, in-game social communications help gamers get closer collaborations and better interactions within their gaming groups and communities through voice comments or text messages (S.-M. Chang et al., 2018). By considering the above discussion, the hypothesis was framed.
H4a: There is a significant and positive impact of socialization on user satisfaction.
H4b: There is a significant and positive impact of socialization on user loyalty.

2.6 Earnings in online gaming

Earnings consist of rewards and other prizes; they might include the virtual things earned after the completion of games, and rewards and reinforcements are considered extrinsic motivation (Vansteenkiste et al., 2006). Once the player gets excited and becomes more involved in online games, then the rewards are considered secondary. But these rewards are considered vital only if the players are playing continuously (Csikszentmihalyi, 2014), because they are spending a lot of time on them. Rewards include monetary benefits and novel and social rewards (Galván, 2010). Therefore, we took the earnings in the form of virtual things, monetary benefits, and other forms. Based on the

above contributions made by the researchers, we propose that earnings factors lead the gamer to engage in online games, and based on that, the hypothesis has been formed.
H5a: There is a significant and positive impact of earnings on user satisfaction.
H5b: There is a significant and positive impact of earnings on user loyalty.

2.7 Competition in online gaming

A competition is classified as a contest between computer and user: competition against chance; against oneself; against time, etc., or a combination of these factors (Alessi & Trollip, 2000), Some authors consider this competition factor as an unnecessary element influenced by frustrating gaming content (Anderson & Morrow, 1995), and it may create negative memories, thoughts, and emotions due to aggressive feelings and frustration(Berkowitz, 1990; To et al., 2020; Q.-F. Yang et al., 2020). However, some authors mention this competition factor as an essential gaming characteristic (Akilli, 2007; Alessi & Trollip, 2000; Chen et al., 2020; Michael & Chen, 2005) because it is considered to enhance motivation for playing and providing a clearly defined goal, mentioned as a contest between groups or individuals (Michael & Chen, 2005). The competition factor of players is an important factor contributing to rapid progression in online games (Billieux et al., 2013). So, it is proposed that the competition factor keeps gamers engaged in the gaming world and facilitates satisfaction. So the following hypothesis was framed.
H6a: There is a significant and positive impact of competition on user satisfaction
H6b: There is a significant and positive impact of competition on user loyalty.

2.8 Cognition in online gaming

Playing online games will pave the way for engagement and enjoyment in learners' learning. The foreign language, reading skills, and lexicon skills are developed through engaging in online games (Thorne et al., 2009). General self-efficacy is enhanced through the online gaming experience, where the player's online gaming potential is encouraged by challenges (Jang et al., 2010). The mastery experience is replaced by positive successful experiences like accomplishing missions/tasks, achieving valuables, and defeating monsters. The learning motives of students are increased by playing digitally based games (Papastergiou, 2009), and the mastery experience is only considered to determine its effects on self-efficacy (Jang et al., 2010). But in our study, the mastery factor is considered the learner's learning intention in online games. Hence, we propose that the cognition factor leads the user to engage in online games. Based on these opinions, we have developed the hypothesis.
H7a: There is a significant and positive impact of cognitive development on user satisfaction.
H7b: There is a significant and positive impact of competition on user loyalty.

2.9 User satisfaction and loyalty

The perceived satisfaction, quality, and loyalty of consumers are used to measure the productivity and performance of a product or service in marketing (Cortiñas et al., 2004). Consumer satisfaction has a potential influence on behavioural intentions and customer retention (Cronin Jr et al., 2000; Ratnasari et al., 2020; Truong et al., 2020). The participants' motivation to stay with the channel is affected by the customer satisfaction construct according to the B2C channel satisfaction model (Devaraj et al., 2002). Consumer satisfaction and consumer loyalty are inseparable in the marketing area (Oliver, 1999). The key elements for determining consumer loyalty have been identified as product satisfaction and service provided (Skogland & Siguaw, 2004). The bond between user satisfaction and user loyalty has been investigated for many products and services, but still, very few studies have been done on online games.
Customer satisfaction serves as the mediating factor that affects customer loyalty (Cronin Jr et al., 2000; Nyan et al., 2020). Satisfaction is treated as an essential factor because it motivates customers to remain with the channel and acts as an antecedent to make a repurchase, as per the online shopping satisfaction model or the B2C channel satisfaction model (Garris et al., 2002; Tzeng et al., 2021). But which factors will satisfy the customers and, in turn, boost their loyalty are still being studied, especially in the case of online gaming. This study intends to assess the satisfaction and loyalty model of online games based on the following factors: achievement, relaxation, cognition, immersion, competition, socialization, and earning, and to test the effects among the model constructs.
H8: There is a significant and positive impact of user satisfaction on user loyalty.
H9a: User satisfaction mediates the relationship between Immersion and user loyalty.
H9b: User satisfaction mediates the relationship between achievement and user loyalty.
H9c: User satisfaction mediates the relationship between escape and user loyalty.
H9d: User satisfaction mediates the relationship between socialization and user loyalty.
H9e: User satisfaction mediates the relationship between earnings and user loyalty.
H9f: User satisfaction mediates the relationship between competition and user loyalty.
H9g: User satisfaction mediates the relationship between cognition and user loyalty.

3. Methodology

3.1 Measurement tools

The two sections of the questionnaire were developed with demographic questions and contextual characteristics of the online game players. The fundamental details of the respondents, like age and gender, were collected through the first section. The second section of the questionnaire is the compilation of intentions for playing online games, user satisfaction, and user loyalty, which were collected using the five-point Likert scaling technique, scaled from "strongly disagree to strongly agree." This scale has been used to initiate the developed hypothesis.
In this study, the structured online questionnaire was framed with questions related to antecedents of playing online games, user satisfaction, and user loyalty. These factors were used to find out the effects of one on another, and with this motive, the hypothesis was framed as above. To ensure the validity of the structured questionnaire, a hypothesis was developed. In the items under variables, some were based on our ideas, and some were taken from previous studies conducted on online games and user behavior.

3.2 Data collection

The primary model of the study is tested using a structured questionnaire. The questionnaire is given to the online gamers to collect their responses. The anonymity of the respondents was maintained before. After examining the responses, a total of 200 responses have been used in this study.

Table 1: Demographic profile

	Frequency	Percentage
Age		
15-20	76	38
20-30	66	33
30-40	32	16
40-50	18	9
Above 50	8	4
Gender		
Male	122	61
Female	78	39

4. Analysis

4.1 Instrumental development

The demographic section and construction items are the two parts of the questionnaire. The demographics questions dealt with age and gender. The five-point Likert scale questionnaire comprises items like antecedents to play online games, such as achievement, escapism, cognition, immersion, competition, and socialization factors. Some of the earning motivations are adapted from the advancement factor, and some factors are framed by their modification according to the study. The user satisfaction and user loyalty are framed.
The user satisfaction by the respondents is used as a mediating variable, and for that, the intentions of playing online games are used as an independent variable, and the User loyalty is used as a dependent variable, as shown in the figure.1

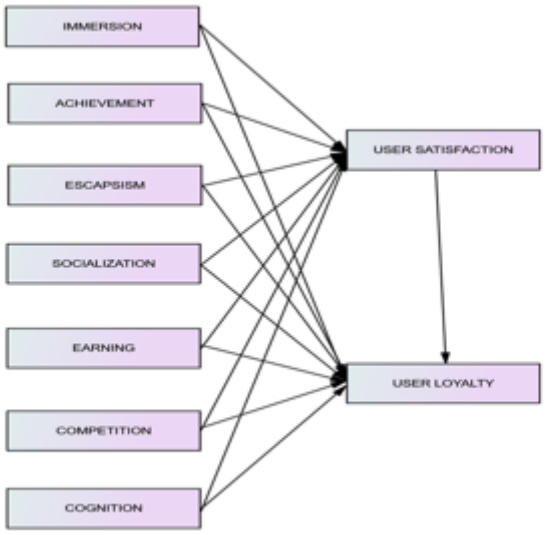

Fig. 1: Conceptual framework

4.2 Measurement model

The model of this study is tested using a step-by-step approach. The normality, reliability, and validity assessment are done for the framed model. Both the convergent and discriminant validity have been examined. The discriminant validity was also established. Finally, the hypothesis was also analyzed.

4.3 Reliability analysis

In this study (Table 2), the skewness value ranges between -2 and +2(Hair et al., 2010), and the kurtosis value ranges between -7 and +7(Byrne, 2010). So, the data is considered to be normally distributed. The Cronbach alpha (CA) value of all the dimensions is greater than the recommended value of 0.7, as shown in Table 4. Hence, it signifies an acceptable level of internal consistency as the values were up to the reliable condition, and the reliability of the values was established.

4.4 Convergent validity

The convergent validity of the data has been confirmed based on three standards: (a) based on the composite reliability of all factors, (b) the loadings of all the items in factor analysis, and (c) finally, based on the extraction of the average variance extracted of all the constructs. The threshold value of composite reliability (CR) and AVE average variance extracted (AVE) was preferred to be greater than or equal to 0.7 and 0.5 (Abd-El-Fattah, 2010). Table 5 indicates that the CR values of the model were above the given threshold, valued from 0.766 to 0.909, and the AVE value ranged from 0.457 to 0.711. All the factors exceeded the threshold AVE value of 0.50, except for achievement,

escapism, and socialization, with values of 487, 488, and 457, but these values have been accepted because the composite reliability values are more than 0.6. As per the recommendations of (Fornell & Larcker, 1981), an AVE less than 0.50 can be acceptable if the composite reliability is higher than 0.6. Hence, the average variance extracted values are considered to be an acceptable fit. Table 4 indicates the items grouped into the particular variables using exploratory factor analysis (EFA) with the help of varimax rotation. The loading of all the items under each variable was more than 0.5, which was considered an acceptable level (F. Hair Jr et al., 2014), along with the KMO value being up to the acceptance level of 0.806 as indicated in Table 3. In this study, the variables were considered valid because the item loadings in factor loadings and the average variance extracted were at an acceptable level.

4.5 Discriminant validity

The next validity to assess on the list is discriminant. In this way, all the constructs are differentiated from other constructs. The square root value of the average variance extracted (AVE) should be greater than the correlation value of each item with its loadings and cross-loadings. The diagonal elements in the table are bolded, representing the values of the square root of each average variance extracted. As per the previous suggestion, the square root of AVE should be greater than its correlation values in the internal constructs (Fornell & Larcker, 1981). Since these values meet the recommended standards, they are considered acceptable. Consequently, Table 6 provides evidence for the discriminant validity of the variables.

Table 2: Normality test

	N	Minimum	Maximum	Mean	Standard deviation	Skewness	Kurtosis
IMN	200	4.00	20.00	12.1550	3.96859	.087	-.710
ACH	200	4.00	20.00	16.1050	2.65314	-1.129	3.043
ESC	200	4.00	20.00	12.2200	3.85694	-.110	-.733
SOC	200	6.00	20.00	15.6850	3.39905	-.629	-.559
EN	200	4.00	20.00	15.1900	4.10220	-.472	-.758
COM	200	4.00	20.00	14.6150	3.57220	-.635	.256
COG	200	4.00	19.00	8.3800	3.50098	.803	-.117
US	200	4.00	20.00	14.8050	4.08047	-.639	-.710
UL	200	6.00	20.00	16.5850	3.42952	-.898	3.043

Table 3: Sampling adequacy

		Values
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.806
Bartlett's Test of Sphericity	Approx. Chi-Square	3583.882
	df	630
	Sig.	.000

Table 4: Rotated component matrix

	Component								
	1	2	3	4	5	6	7	8	9
IMN1					.823				
IMN2					.773				
IMN3					.750				
IMN4					.798				
ACH1				.806					
ACH2				.824					
ACH3				.762					
ACH4				.799					
ESC1						.745			
ESC2						.800			
ESC3						.772			
ESC4						.755			
SOC1									.798
SOC2									.640
SOC3									.788
SOC4									.771
EN1			.776						
EN2			.830						
EN3			.841						
EN4			.841						
COM1		.834							
COM2		.862							
COM3		.795							
COM4		.830							
COG1							.675		
COG2							.794		
COG3							.792		
COG4							.777		
US1								.828	
US2								.678	
US3								.706	
US4								.736	
UL1	.797								
UL2	.798								
UL3	.823								
UL4	.805								

Note: Factors: IMN – Immersion, ACH – Achievement, ESC – Escapism, SOC – Socialization, EN – Earning, COM – Competition, COG – Cognition, US – User Satisfaction, UL – User Loyalty

Table 5: Conformational factor analysis

Dimension		Factor loadings	CA	CR	AVE
Immersion	IMN1	.786	0.809	0.811	0.519
	IMN2	.709			
	IMN3	.656			
	IMN4	.725			
Achievement	ACH1	.766	0.792	0.792	0.488
	ACH2	.806			
	ACH3	.652			
	ACH4	.800			
Escapism	ESC1	.757	0.787	0.791	0.487
	ESC2	.481			
	ESC3	.754			
	ESC4	.674			
Socialization	SOC1	.682	0.905	0.909	0.711
	SOC2	.705			
	SCO3	.731			
	SOC4	.675			
Earning	EN1	.728	0.894	0.896	0.684
	EN2	.844			
	EN3	.878			
	EN4	.849			
Competition	COM1	.815	0.836	0.843	0.575
	COM2	.888			
	COM3	.784			
	COM4	.883			
Cognition	COG1	.623	0.863	0.865	0.616
	COG2	.707			
	COG3	.778			
	COG4	.675			
User satisfaction	US1	.520	0.847	0.850	0.595
	US2	.847			
	US3	.769			
	US4	.894			
User loyalty	UL1	.767	0.761	0.766	0.457
	UL2	.800			
	UL3	.774			
	UL4	.799			

Note: CA – Cronbach Alpha, CR – Composite Reliability, AVE – Average Variance Extracted,
Factors: IMN – Immersion, ACH – Achievement, ESC – Escapism, SOC – Socialization, EN – Earning, COM – Competition, COG – Cognition, US – User Satisfaction, UL - User Loyalty.

Table 6: Discriminant validity

	IMN	ACH	ESC	SOC	EN	COM	COG	US	UL
IMN	**0.72**								
ACH	0.218	**0.698**							
ESC	-0.049	-0.149	**0.699**						
SOC	-0.154	0.094	0.144	**0.676**					
EN	0.047	-0.041	0.242	-0.096	**0.827**				
COM	0.074	0.055	0.236	-0.062	0.612	**0.844**			
COG	0.092	-0.094	0.285	0.198	0.198	0.294	**0.758**		
US	0.163	0.48	-0.107	0.253	0.046	-0.03	-0.1	**0.771**	
UL	0.2	0.389	-0.007	0.1	0.037	-0.077	-0.191	0.651	**0.785**

Note: Factors: IMN – Immersion, ACH – Achievement, ESC – Escapism, SOC – Socialization, EN – Earning, COM – Competition, COG – Cognition, US – User Satisfaction, UL – User Loyalty

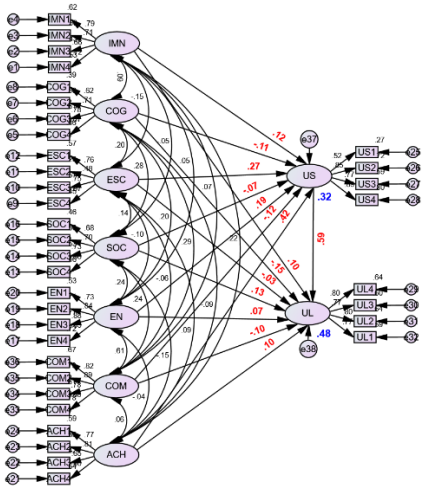

Fig. 2: Structural equation modelling

Table 7: Model fitness

	Definition	Criteria	Result	Fitness
χ^2/df	Chi-square	<3.0	1.088	Good fit
AGFI	Adjusted goodness of fit index	>0.9	.839	Acceptable fit
CFI	Comparative fit index	>0.9	.985	Good fit
NFI	Normed fit of the index	>0.9	.842	Acceptable fit
IFI	Incremental fit index	>0.9	.985	Good fit
TLI	Tucker-Leis fit index	<0.90	.983	Good fit
RMSEA	Root Mean Square Error of Approximation	≤0.06	.021	Good fit

Table 8: Regression analysis

Hypothesis	IV	DV	B	S.E	t	P value	Supported/Not supported
H1a	IMN	US	0.120	.050	1.644	0.137	Not supported
H2a	ACH	US	0.422	.082	4.475	***	Supported
H3a	ESC	US	0.274	.072	2.983	0.003	Supported
H4a	SOC	US	-0.065	.058	-.626	0.433	Not supported
H5a	EN	US	0.193	.052	2.069	0.047	Supported
H6a	COM	US	-0.115	.063	-1.295	0.237	Not supported
H7a	COG	US	-0.111	.062	-1.453	0.202	Not Supported
H1b	IMN	UL	0.101	.068	1.368	0.171	Not Supported
H2b	ACH	UL	0.102	.104	1.247	0.212	Not Supported
H3b	ESC	UL	0.13	.082	1.675	0.094	Not Supported
H4b	SOC	US	-0.032	0.096	-0.399	0.69	Not supported
H5b	EN	US	0.062	0.071	0.748	0.454	Not Supported
H6b	COM	US	-0.103	0.087	-1.147	0.251	Not Supported
H7b	COG	US	-0.145	0.087	-1.791	0.073	Not Supported
H8	US	UL	0.587	0.168	5.170	***	Supported

Note: Factors: IMN – Immersion, ACH – Achievement, ESC – Escapism, SOC – Socialization, EN – Earning, COM – Competition, COG – Cognition, ADD – Addiction, US – User Satisfaction.

The structural analysis of the hypotheses is shown in Figure 2 and Table 8. The effects of achievement factor (β =.422, *p =.000*), escapism factor (β = .274, *p* =.003), earning factor (β = 0.193, *p* =.047) on user satisfaction, and finally, user satisfaction having a positive relationship with user loyalty with the effect of (β =.587, *p =.000),* are treated as significant. Thus, H2a, H3a, H5a, and H8 are supported. But the relationship between immersion factor (β =.120, p =.137), socialization factor (β = -.065, p =.433), competition factor (β = -.115, p =.237), and cognition (β = -.145, p =.202) on user satisfaction is treated as not significant because the p value is greater than the table value. Therefore, H1a, H4a, H6a, and H7a are not supported. Likewise, all the factors have an insignificant relationship with user loyalty, but H3b and H7b have a p-value at the 10% level, even though they are considered insignificant, and their values are mentioned in the following table. The R2 value greater than 0.25 can be categorized as a moderate relationship (Hair et al., 2011). Hence, the R2 value of 0.322 for user satisfaction is estimated to explain 32 percent of its variance, and the R2 value of 0.472 for user loyalty is estimated to explain 48 percent of its variance.

Table 9: Mediation analysis

NO.	IV	Direct effect [a]		Indirect Effect		Boot LLCI	Boot ULCI	Type
		B	P	β	P			
H9a	IMN	0.101	.171	0.070	0.158	-0.023	0.188	No effect non-mediation
H9b	ACH	0.102	.212	0.248	.000	0.161	0.6	Indirect only mediation (Full)
H9c	ESC	-0.032	.69	0.161	0.001	0.075	0.37	Indirect only mediation (Full)
H9d	SOC	0.13	.094	-0.038	0.409	-0.16	0.058	Direct only non-mediation at the 0.1 level
H9e	EN	0.067	.454	0.113	0.053	-0.001	0.225	Indirect only mediation (Full)
H9f	COM	-0.103	.251	-0.068	0.264	-0.218	0.057	No effect non-mediation
H9g	COG	-0.145	.073	-0.065	0.181	-0.207	0.038	Indirect only mediation (Full)

Note: Factors: IMN – Immersion, ACH – Achievement, ESC – Escapism, SOC – Socialization, EN – Earning, COM – Competition, COG – Cognition, ADD – Addiction, US – User Satisfaction.

As in all cases, the mediator is the US, and the dependent variable is UL

4.6 Result of mediation analysis

Table 9 presents the mediation result, which shows that the indirect effect of achievement on user loyalty through user satisfaction was significant (c = 0.248; p =.000), but the direct effect was not significant with a value of (β = 212; p = 0.102). Followed by escapism, which also had a significant indirect effect with a value of (c = 0.161; p =.001), but the direct effect was not significant with a value of (β = -0.032; p =.69). Similarly, the earning factor got the indirect effect as a significant one (c = 0.113; p = 0.053), and the direct effect was found insignificant with a value of (β = 454; p = 0.067). In all these factors, the indirect effect is significant and the direct effect is insignificant, and because of this condition, these fall under the categories of indirect-only mediation or full mediation.
In contrast, the non-mediation role, which means a non-significant indirect effect, was found at (c = -0.038; p = 0.409) and the direct effect at 0.1 level at (β = 0.13; p =.094) between socialization and user loyalty as well as between cognition and user loyalty at (c = -0.065; p = 0.181); and the direct effect at 0.1 level at (β = -0.145; p = 0.073). Hence, this will fall under direct-only non-mediation (at 0.1 level).
Finally, it was found that there is no effect or mediation between immersion and user loyalty. Because of the insignificant p-value in both indirect and direct effects at (c = 0.070; p = 0.158) and (β = 0.101; p = 0.171), similarly, competition and user loyalty have an indirect and direct effect at (c = -0.068; p = 0.264) and (β = -0.103; p = 0.251).

5. Discussion and Implications

5.1 Discussion

The regression test exposed that some motivational factors, such as immersion, competition, cognition, and socialization on user satisfaction and all the motivational factors on user loyalty, were not significant predictors. It can be clarified by the evolving feature of gaming situations and user behaviors. Immersion is now an ordinary factor in every modern game, which makes variations less influential, while comparable immersive needs can be achieved through other platforms, such as streaming platforms or VR. Competition has been weakened by random or improper matchmaking, which limits the competitive essence and decreases lasting competitive spirit. Cognitive engagement is progressively satisfied by alternative digital media, which reduces its peculiar influence on gaming satisfaction or loyalty. For socialization, most of the users are now dependent on sophisticated social media networks for their social needs, while in online gaming, improper pairing gives fewer opportunities to build long-term relationships. In the case of achievement, while it may improve satisfaction, loyalty relies more on factors such as frequent updates and strong gaming community engagement rather than individual milestones alone. Similarly, escapism may give temporary relief but lacks in giving stable relief to foster enduring loyalty. Finally, earnings through in-game prizes may lead to short-term commitment, but it won't be effective in generating long-term loyalty unless it provides meaningful experiences.
The regression impacts show that achievement, escapism, and earning opportunities significantly influence user satisfaction, while immersion, competition, socialization, and cognition were not that impactful. This shows that certain motivations still derive significant marginal utility, while other factors may have reached a saturation point, consistent with the law of diminishing marginal utility. The mediation analysis additionally confirms that achievement, escapism, earning, and cognition have only indirect effects on loyalty over satisfaction, indicating that loyalty arises from the total utility realized through satisfaction. Meanwhile, immersion and competition show insignificant impact, suggesting that they will not provide longer incremental satisfaction in modern online gaming; meanwhile, socialization exerts only a weak direct effect. Overall, these findings authenticate that utility maximization can be achieved through user satisfaction and loyalty

5.2 Theoretical Implications

This study compiles various contributions to the literature. At first, this study discussed the gaming antecedents that will lead to user satisfaction. Before, a lot of studies had contributed to online games in dimensions like gaming addictions, risk factors, and gender differences (Hussain et al., 2012; Ko et al., 2005; Wang et al., 2021). (Teng, 2018)For that, the motivation factors of previous studies were also referred to. But in this study, the motivation factors were used to examine user satisfaction and loyalty.
In terms of contribution to theory, the previous study (Wang et al., 2021) found that gaming factors like achievement and escapism factors have a significant and positive relationship with psychological ownership. And the study (Teng, 2010a) proved that immersion satisfaction affects gamer loyalty.
In consumer studies, immersion plays an important role, as per the previous study(Suh & Chang, 2006). In that study, the significance of consumer behavior is addressed. The impact of immersion on user loyalty was analyzed in the previous study, and it is declared that immersion has a positive and direct relationship with user loyalty (Teng, 2010b), but immersion was used as a mediating factor in that research. In this study, it is found as an effect and a non-mediation effect. This is because modern online gaming platforms were already providing a high level of standard immersive experiences, which makes immersion a less predictive factor of satisfaction and loyalty.
Among the hypotheses developed in this study, the relationship between earning, escapism, and achievement has a significant relationship with user satisfaction. By way of theoretical contribution, this study may be closest to some of the related work, like the utilitarian value and hedonic value, which were combined as an experiential value that is like the entertainment factor of this study and had a positive and significant effect on online satisfaction. In this study, online satisfaction was used as the mediating variable and online loyalty as the dependent variable (H.-E. Yang et al., 2009). The impact of escapism on expectancy for character growth was found to have an insignificant relationship with expectancy for character growth in the study by (Teng, 2018) but had a significant relationship with the enjoyment factor (Merhi, 2016), and it was also analyzed with online gaming addiction with the mediating factor psychological ownership, then the escapism factor had a significant and positive relationship with psychological ownership (Wang et al., 2021). In this study, the relationship between escapism and user satisfaction is analyzed and found to have a negative effect with a significant relationship. Additionally, in mediation analysis, it shows that there is an indirect effect between escapism and user loyalty through user satisfaction.

The effect of the cognition factor in video games was studied in the previous study, and it was concluded that cognition has a positive relationship with video games (Nuyens et al., 2019). In this study, the cognition factor resulted in a direct-only non-mediation effect with an insignificant indirect value and a direct effect with a 0.1 significant effect. So it does not support the previous study results.
Factors like achievement, enjoyment (entertainment), and social interaction are considered to be the motivating factors to continue playing (Wu et al., 2010). The materialistic attitude of players towards motivation to play online games (e.g., escape and virtual identification; self-confidence and achievement; reward and entertainment; sociability) predicts the online game playing attitude, and it is mediated by motivation factors (J.-H. Chang & Zhang, 2008). The influence of perceived enjoyment, preference, and social norms on customer loyalty to online games was found in (Hsu & Lu, 2007). Competition motivation, social interaction, and fantasy motivations were considered the most important motivations to play online games for male respondents, comparable with female respondents (Jansz et al., 2010; Lucas & Sherry, 2004). But in this study, the competition factor was found to have no effect and a non-mediation effect with an insignificant value. This might be because of random matchmaking, which can reduce the competitive spirit of winning against the player with whom it was lost. and the socialization factor was found with indirect mediation only, with a significant indirect effect and an insignificant direct effect.
This study covers Utility Theory in the online gaming field by empirically indicating that motivational factors function as a utility source. It shows the vibrant nature of marginal utility in digital perspectives. Certain motivations, such as immersion and competition, lose their impact, which was once consistent across games; meanwhile, other factors, such as achievement, earning, and escapism, endure to provide incremental satisfaction. By theorizing loyalty as a rational product of total utility maximization, the study bonds psychological factors with economic theory, presenting how online gamers replicate consumers in classical markets, and distributing attention and time to increase satisfaction. Therefore, these findings strengthen the economic significance of gaming studies; along with that, they explain the user engagement and retention in online entertainment markets through utility theory.
This study is a little close to some of the results of the previous studies, but this study extends the work of the previous study by directly finding the impact of motivating factors on user or gamer loyalty. This study bridges gaming antecedents with user satisfaction. Whereas antecedents are the independent variable, user satisfaction is the mediating variable, and user loyalty is the dependent variable.

5.3 Practical implications

The research will provide suggestions and implications for multiple groups, such as users and game designers. For users, the findings will inform the antecedents that they are getting from online games. Particularly, apart from gaming for entertainment, factors like immersion, achievement, escapism, socialization, competition, and cognition will provide internal satisfaction. Among all the framed hypotheses, the relationship between dependent factors (cognition, socialization, competition, and immersion) and user satisfaction is found to be insignificant. Based on the result, it may seem less harmful, but if the goal is to get entertainment, it should be discussed. It needs serious attention for several reasons.
First, as mentioned earlier, there is no effect or non-mediation effect between immersion and competition on user satisfaction and loyalty. Second, the escapism and cognition factors are found to have a direct, non-mediation effect. Third, the indirect-only mediation relationship between the achievement, socialization, and earning factors and user satisfaction and loyalty.
The following implications were written for game designers: Since they keep investing a lot in its advancements and upgrades to satisfy their users by providing better gaming facilities, these things have to be considered by them when they are launching a new game.
At the same time, this study discovered a surprising result that mediation has no effect. Online games are a virtual reality platform to satisfy the fantasy cravings of users, but they have an insignificant relationship with user satisfaction and loyalty, which means advancements and upgrades must be noticed with more attention. This may be due to the abundance of inventions to attract and cover social media users with various recreational activities like monologue, storytelling, or investigative podcasts, which may feed the imagination of the human when listening to the voice. So it is important to advance the game designs over the other sources to meet the expectations of the users.
The competition factor showed a non-effect and non-mediation relationship in the mediation analysis. This is because, nowadays, the probability of encountering the same opponent is very low in online games. Therefore, players may not have the opportunity to defeat the opponent who previously defeated them. This diminishes the competitive aspect of the online gaming platform, making it merely an entertainment platform.
There is an insignificant relationship between the cognition factor and user satisfaction, and in the mediation results, it is found with a direct non-mediation effect. This result is a reflection of the existence of other virtual platforms in recent years, which alleviates the cognitive need for online games. As these motivation factors contribute to user satisfaction, which in turn relates to user loyalty, it is very important to consider even a small drawback. Based on this result, the game designers should make modifications to the online games to deal with the cognitive development needs of the users. The games should be developed with the inclusion of skill-developing features along with entertainment. So, the gamer will get cognition benefits from a relishing activity in a virtual world.
The socialization factor is also insignificant because of the handful of advanced social media platforms that satisfy the need for socialization. Socialization in online gaming and social media may not be similar because in social media, people can build their bonding with the people they like to communicate with; both the sender and receiver don't need to be available at the same time. But in online games, at both ends, people have to be present at the same time to communicate, and another thing is that systemized programs will connect you randomly to different people; the communication between the players will only exist until the game is over. Due to this, the probability of getting the same player again is less.
At last, escapism has a direct-only non-mediation effect, which means it has a direct effect on user loyalty and an insignificant relationship with user loyalty through user satisfaction. Online games may offer temporary relief from the real world, but the player can't find ultimate solutions to their problems. So, the players have to be aware of escapism in online games.
Other than that, the achievement, socialization, and earning have either an indirect or a full mediation effect on user loyalty through user satisfaction. Therefore, the game designers have to consider the reviews, feedback, and suggestions of users to implement the necessary development.
Moreover, the findings convey relevant suggestions for policymakers and regulators. Since achievement, socialization, and earning factors drive satisfaction significantly, guidelines are required to guarantee these systems are responsible and ethical. Clear monetization models, protections against addictive play, clear monetization models, and policies promising user well-being (e.g., playtime reminders to promote breaks, spending limits, limiting and encouraging cognitive benefits) can help to create a good gaming ecosystem that increases enjoyment and protects mental health and promotes responsible gaming.

5.4 Economic implications

This research highlights the importance of online game designers to focus on long-term engagement strategies instead of focusing on short-term gameplay attraction. Revenue generation incrementally depends on content updates, robust community-oriented features, cross-platform combinations, and justifiable reward systems that inspire repetitive purchases and sustained participation. Meanwhile, market dynamics are molded by ecosystem special effects, where network-leading socialization augments user retention, and by the progress of the esports economy, which generates additional revenue streams from advertising, streaming, and sponsorships. Moreover, focusing on customers' value instead of short-term attraction confirms more predictable and stable revenue flows, emphasizing the significance of aligning business models with growing user motivations.

6. Conclusion

In this study, user satisfaction has a positive and significant relationship with user loyalty. In this, some factors had a mediation effect and some had a non-mediation effect. According to the output, suggestions have been given. In mediation analysis, three factors are declared to have an indirect-only mediation effect. For those factors, it is suggested to follow the feedback and suggestions to create advancements in online games. Apart from that, two factors had direct and only mediation, and two had no effect and non-mediation effects. Those factors are also offered with the implementing strategies, according to their conditions. Therefore, to achieve the required developments, game creators must take user reviews, feedback, and recommendations into account. So the result of this study is that it will give an idea to the game designers for their betterment and make the users think about the intensity of online games among them.

7. Limitations and Future Scope

This study focused on the mediating analysis of user satisfaction between the antecedents of the user playing online games and user loyalty. The current study's findings might require improvements in the future because the results of this study are subject to change over time. Thus, incorporating other dimensions in the future could aid in advancements. Future studies could explore cultural variations in player motivations, trace satisfaction and loyalty through longitudinal studies, and compare impacts across genres. Integrating new extents such as emotional regulation, linking satisfaction to effects like revenue and retention, and measuring the influence of evolving technologies like augmented reality, virtual reality, and cloud gaming, would also cover this work. As a final point, analysing how liable gaming policies affect player satisfaction and welfare can also be studied in the future.

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Appendix:

List of items

Factors	Variables	Items
Immersion	IMN1	Learning about stories and lore of the world
	IMN2	Feeling immersed in the world
	IMN3	Exploring the world just for the sake of exploring it
	IMN4	Creating a background story and history for your character
Achievement	ACH1	To quench the thirst of success
	ACH2	Becoming powerful
	ACH3	Acquiring rare items
	ACH4	Optimizing your character as much as possible
Escapism	ESC1	Using this platform to get stress relief
	ESC2	I feel like sparing some time for myself apart from being always for others.
	ESC3	This helps me forget my worries.
	ESC4	To escape from real-life problems or the real world
Socialization	SOC1	It gives a chance to develop communication with all the people in the world.
	SOC2	I like to play with the random, unknown players.
	SCO3	I like to chat with other players.
	SOC4	Being part of a friendly, casual guild
Earning	EN1	Initially, I can earn by just logging in to the gaming platform.
	EN2	I can earn by completing the task.
	EN3	Online games lead me to monetize my skills and passion
	EN4	Online games give me a steady income
Competition	COM1	To increase the competitive spirit
	COM2	Competing with others makes me feel superior
	COM3	It gives me the maturity to handle both victory and loss.
	COM4	Competitive spirit helps me to try again and again.
Cognition	COG1	For an active mind
	COG2	To develop a skill

	COG3	To learn new things
	COG4	To get gaming knowledge according to the trend
User satisfaction	US1	The online games are up to my expectations
	US2	I'm happy with what I experienced.
	US3	I will play frequently.
	US4	My degree of satisfaction compels me to play more in the same genre.
User loyalty	UL1	I will play the online games in the future also
	UL2	I will refer the online games to others also.
	UL3	I would be willing to pay even if the games were no longer free to play.
	UL4	I won't favor any leisure activities.