

Youth and Multiplayer Mobile Games Adoption: The Effects of Individual Gratifications, Novelty Seeking, and Social Norms

Saurabh Gupta, Jaipuria Institute of Management, Ghaziabad, India*

 <https://orcid.org/0000-0003-2180-086X>

Nidhi Mathur, Jaipuria Institute of Management, Ghaziabad, India

ABSTRACT

The rapidly growing technology has created new form of gaming platforms for youth. The online gaming industry is revolutionised with the emergence of information technology and advanced graphical engines. The purpose of this study is to investigate the effects of individual gratifications, novelty seeking, and social norms on the attitude and intention to play multiplayer mobile games adoption among youth. Structure equation modelling (SEM) technique was utilised to examine the effect of various antecedents with the help of data from 280 respondents. The findings of the study suggest that there is a significant impact of social interaction and novelty seeking on the user's intention to play online multiplayer games. The research findings will be beneficial for the marketing practitioners and game designers to incorporate social aspects and novel graphics to enhance the marketability of the game. Further, this study contributes to the literature of human-game-technology interaction and widens the scope for further research to explore other dimensions in game adoption.

KEYWORDS

Gratification, Human-Technology Interaction, Multiplayer Mobile Game, Novelty Seeking Behaviour, SEM, Social Norms

INTRODUCTION

The online gaming industry is revolutionised with the emergence of information technology and advanced graphical engines. Many new forms of mobile games such as multiplayer games, augmented reality games and social media games have emerged (Rauschnabel et al., 2017). Digital games have reach out as a mass medium among all the age group people, all around the globe and billions of users are interacting through digital games (Vashisht & Royne, 2016). In general gaming can be classified in three categories, they are off line games, games played with the help of browser and the multiplayer online line games (Van Rooij, *et. al.*, 2010). Multiplayer online games (MOGs) are the online games which can be played with many people at a time.

The technological advances have increased the consumer engagement with computer games including adult gamers or adolescents, parents and children (Christy & Kuncheva 2014). Among the adolescents, mobile games are most popular as an activity of leisure which have been an instigator

DOI: 10.4018/IJESMA.296574

*Corresponding Author

This article published as an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0/>) which permits unrestricted use, distribution, and production in any medium, provided the author of the original work and original publication source are properly credited.

in the digital games universe by providing variety of games and entertainment applications. Mobile phones have added a new dimension by blending virtual games and entertainment applications besides communication. Mobile games have also been successful in replacing the personal computer-based games as they do not require expertise in computer skills and are also user friendly. In terms of popular gaming genres, puzzle, action and adventure are the most consumed among casual and hardcore players. Also, mobile phones are the most preferred device amongst online gamers owing to the flexibility they offer in terms of the potential 'anytime, anywhere' usage. Mobile games have evolved greatly and major functions are performed through mobile applications. With the prevalence of new technologies in the mobile phones, people are inclined more on multiplayer games than single user games. It is evident that this technology diffusion has led to newer forms of games on mobiles and computers based virtual and augmented reality games (Rauschnabel et al, 2017).

The surge in the digital usage has driven the online gaming market in India. The revenue from the gaming market is expected to hit the \$1-billion mark by 2021 and projected to be valued at \$3.7-billion by 2024. The revenue share of mobile games in the online gaming industry's total revenue in India is about 89% which indicates that the mobile games are the most preferred device for playing on line games. (KPMG, 2019 Report). The digital games can be a catalyst in creating social environment where interaction can lead to meaningful relationship (Krotoski, 2004).

The various researches have been conducted for the factors influencing the mobile game adoption. Perceived enjoyment and perceived attractiveness are incorporated as antecedents of attitude towards mobile gaming (Ha et al, 2007). Furthermore, Liang, et.al (2011) argued mobile games adoption is likely to increase if they are more fun, especially for casual gamers than hardcore ones (Neys et al., 2014). Im, Bayus, & Mason, (2003) identify that the novelty seeking among the youth is the one of the main determinants of attitude toward mobile games. Though there are various research on adoption of multiplayer mobile game but, still there is a dearth of literature in this area, especially in Indian and other developing nation context. Also, novelty seeking behaviour has not been explored with the perspective of mobile multiplayer mobile game. Previous research has been conducted in corporation of technology adoption model and use and gratification model constructs to determine the adoption of multiplayer mobile game (Ha et al 2007; Wuet al., 2010; Wei & Lu, 2014)). This study can be considered as novel research as the research proposes a comprehensive model incorporating some dimensions of Technology adoption model, gratification, Novelty seeking behaviour and social norms. Therefore, the main purpose of this research is to investigate the effects of Individual gratifications, Novelty Seeking and social norms on the attitude and intention to multiplayer mobile games adoption among youth. From a practical perspective an understanding of gratification, novelty seeking & social norms will help the game developers to design more interactive games for better advertising effects.

The flow of the paper is as follows: Section 2 includes the theoretical background followed by section 3 which gives a conceptual framework of the paper and research hypothesis. In section 4 the methodology of the paper is outlined, section 5 includes results and discussion on the research paper and section 6 discusses the managerial implication. The last section covers the conclusion followed by limitation and scope for further research.

THEORETICAL BACKGROUND

Mobile games are widely used application of information technology and therefore it is important to study the factors influencing the adoption of multi-player mobile games. The issues concerning the digital game adoption has received much attention across various disciplines like social sciences, media (Giddings, 2016), marketing (Seo et al., 2015), internet research (Hamari & Sjöblom 2017) and information system (Hamari & Sjöblom, 2017). The available literature on online gaming suggests that the research on the multiplayer mobile games is still on nascent stage. A significant research work is undertaken in the video game industry and mobile technologies. For information technology adoption, many models have been developed such as Technology Acceptance model (Venkatesh &

Davis, 2000). TAM has mainly focused on technologies which are task oriented such as short message service (Kim, Park & Oh, 2008), mobile SMS advertising (Zhang & Mao, 2008), e-mail (Karahanna & Limayem, 2000). Furthermore, TAM can be used to understand the purpose and motivation to adopt technology for entertainment and online games. Some variables like perceived attractiveness, perceived enjoyment and perceived lower sacrifice are also incorporated as antecedents of attitude towards adoption of mobile games (Ha et al 2007).

The Elaboration Likelihood Model (ELM) (Petty & Wegener, 1999) suggested that the individual beliefs are integrated for attitude formation towards an object. This is done via one of the two distinct processes, the central route or the peripheral route. According to the ELM model, for the individuals whose attitudes are formed via central route will have strong relationship between usefulness and attitude towards online games than the individuals whose attitude are formed via the peripheral route. The researchers believe that usefulness and enjoyment are more heuristic beliefs and have a stronger influence on attitude formation. Some other theories are developed to understand the behaviour of individual users for online game adoption such as, Theory of Reasoned Action (Fishbein & Ajzen, 1975) and Self-efficacy theory (Bandura, 1982), Social cognitive theory (SCT) have been extensively applied to explain individual behaviours (Compeau & Higgins, Compeau et al., 1999), Uses and gratifications theory (Chiu & Lee, 2011). The Theory of Reasoned Action advocates subjective norms (Social influence) directly affect the behavioural intention (Ajzen, 1991). Subjective norms and its antecedents provide a foundation to social environment model. Social cognitive theory suggests that personal cognition, social environment and behaviour interaction leads to human behaviour (Hmieleski & Baron, 2009).

In the context of mobile gaming the important antecedents for user's intention to download a game were identified as perceived value, content quality, emotions and demographics (Su, et al., 2016). The recent research work on the multiplayer mobile games suggest that flow experience, perceived control, perceived ease of use and socialisation are important factors in customer engagement to enhance their experience (Kai Kang, et. al., 2019).

As (Hojjati & Khodakarami, 2016) has observed that TAM model was not sufficient in predicting the information communication technology (ICT) acceptance. It was also evident that TAM model did not provide comprehensive precursors for mobile usage and social influence for facilitating behaviour towards adoption of technology (Torres, & Gerhart, 2019). Moreover, the model was also criticised on the notion that the model is not robust to elaborate the individual uses behaviour towards accepting or rejecting any technology for buying decision (Hai & Alam Kazmi, 2015). Thus, this research paper has included only two components of TAM (Technology adoption Model) perceived fun and perceived usefulness. Further, the TAM model has a limitation that it does not include social norms as a predictor for online game adoption. The present research incorporated social norms as an important construct for adopting online multiplayer game by youth. Wu, et al. (2010) viewed that the online games include various categories of gratification and classified them into social interaction, enjoyment, and achievement. Wei & Lu (2014) also suggested that gratification reflected from perceived enjoyment and interaction with others turn out to be strong determinant for user intention to play online mobile games. These sub-constructs have a major contribution towards individual gratification. Therefore, this paper incorporated other factors such as novelty seeking, gratifications and social norms and examines the effect of these factors on the multiplayer mobile games' adoption.

CONCEPTUAL FRAMEWORK AND RESEARCH HYPOTHESES

Individual Gratifications: Perceived Usefulness, Interaction with Others And Perceived Fun

The research work is based on the factors influencing the intention to play multiplayer online games applying the Uses and Gratification theory components. Uses and gratification theory is an approach which is audience centric, the approach helps to understand why people use specific media

continuously and actively to gratify specific needs (Katz et al., 1973). UGT suggests that individuals use multimedia channels for satisfying their cognitive and affective needs and intrinsic gratifications (Florenthalet al., 2012).

In UGT, the gratification of the people need for social connection is increased by social presence on the social networking site which in turn influences continued usage. These gratifications can be categorised as social gratifications (social interaction and social presence) hedonic gratifications (enjoyment, fantasy, and escapism), utilitarian gratifications (achievement), they motivate individual's sustained intention to use social network site (Li et. al., 2015). In the UGT paradigm, usage of online games and social networking site is strongly determined by uses and gratifications attributes such as informativeness, social interaction, playfulness (Cheung et al., 2011). The two important antecedents' attitude and intentions for sustained use of social networking site are empirically validated by research based on UGT (Chiang, 2013). Similar approach is used in this research to explore the role of gratification on users' attitude and intentions towards the multiplayer online mobile games.

The online mobile games are design experience-oriented games played on mobile devices to fulfil the particular need of the user, and the player experience more fun and interaction which is not possible in single player game, thus the gratification approach can be applied to the online gaming entertainment.

It is evident from various research that online games, where there is a human opponent, report more presence, experience more enjoyment and flow in comparison to when they play against a computer or device. Mandryk et al. (2006) also suggested that playing game with other person as opponent leads to higher arousal and a sense of more fun. Hence in this paper impact of perceived usefulness on individual gratification is explored by the researcher. In the TAM, perceived usefulness has been extended and refined in various innovations (Curry et.al, 2013) namely innovation performance of job/life/safety. The researcher described perceived usefulness as perceived improvement of the life experience of players by playing social mobile games.

H1. The perceived usefulness of multiplayer mobile games has positive effect on the individual gratification.

Multiplayers gamers interact with each other and spent most of the time together while playing online games have made the games popular. This can also lead to form meaningful relationship with other players which can be altered at times (Jansz & Martens, 2005). The two-tier interaction between the users and the system and the user to user helps in building trust and loyalty among the players (Choi & Kim, 2004).

Social interaction is the factor which is widely identified as a key factor for the success of multiplayer online games and the users are more engaged in those games and play the game continuously leading to the success of the games (Cole & Griffiths, 2007). It is also observed in earlier researches that the multiplayer gamers get more engagement in gaming activities with social interaction than they do on non-social games leading to frequent play and spending more time on social games (Hou, 2011).

Moreover, while playing multiplayer games the participants can create their own forums to facilitate social interactions among them with shared interests (Roy & Goss, 2007). Thus, it could be proclaimed that positive social support has an important role in prognosticating favourable attitudes and intentions to engage in online games (Hsu & Lin, 2008).

H2. The interaction with other on multiplayer mobile games has positive effect on the individual gratification.

Individuals want to spend more time in amusing environment, but there is very limited research conducted on the topic “fun”. There are some evidences of earlier research on utilizing the word ‘fun’ or ‘playfulness’ or ‘flow’ (Agarwal & Krarhanna, 2000; Csikszentmihalyi, 1991).

Mun & Hwang (2003) examined the willingness and technology acceptance to involve with computer-based tool with reference to enjoyment. There are empirical evidence of not only the relevance of enjoyment as a motivational factor to play games, but it also helps in understanding the relationship with mobile game usage in general (Nysveen, Pedersen & Thorbjørnsen, 2005). So, it can be concluded that perceived enjoyment (PE) is the extent to which any activity is considered to be enjoyable and it does not consider any performance consequences (Davis & Warshaw, 1992). The extent to which player expects to derive pleasure, fun and joy from playing mobile games is referred as perceived enjoyment. It may be implied that player may opt for mobile gaming simply because they want to experience fun, elation, joy and pleasure from playing those games or they would have the intention to play those games. The literature from earlier research also indicates that perceived enjoyment is a key motive for playing on line games. It is one of the constructs which has been conceptualized in the technological acceptance model (Sherlock 2007).

Wang & Li (2012) in their research concluded that perceived enjoyment is the most influential factor which has a positive effect on consumers’ intention and gratification. The general perception game enjoyment has been investigated in the earlier research (Shin & Shin, 2011) but there is very less empirical research scouring into the components of game enjoyment and their impact on gratification. From the above researches it is evident that though the concepts are theoretically distinguished but “enjoyment” is repeatedly found to be a relevant variable for playing mobile games (Shin & Shin, 2011, Lee & Quan, 2013).

H3. The perceived fun on multiplayer mobile games has positive effect on individual gratification.

Many researchers have established that online gamers continue to play the games with stronger motivation and positive attitude if they seek more gratification from it (Chou & Tsai, 2007; Ha et al., 2007). Individual gratification refers to the extent of satisfaction of players need. So, it can be assumed that a stronger gratification leads to greater intention to play mobile games. A social interaction through online games to interact with other people is an important gratification. Interaction among the player and enjoyment are adopted as the major motivations for playing mobile games, which leads to individual gratification (Sherry et al. 2006). Wei & Lu (2014) argued that individual gratification significantly influences the attitude and intention to play online social games on mobile devices. Therefore, it can be hypothesed that:

H4: The individual gratification has positive effect on attitude toward multiplayer mobile games

Novelty Seeking

“Inherent Novelty seeking” may be defined as the receptiveness of an individual towards new ideas (Hirschman, 1980). Socialising, exploring and novelty seeking are the inherent motivations among many gamers of the online games (Hussain, Z., et.al., 2015). Inherent novelty is considered to be a relatively stable descriptive trait of the individuals which is found to be invariant across situational considerations (Robinson et al., 2005). In the context of technology, inherent novelty seeking reflects an individual’s willingness to try new technology or technology enabled product (Agarwal, Prasad, 1998). Venkatraman (1991) stated that novelty seeking behaviour is a proclivity to view new products and services. It can be related to the desire for new experiences and trying new products. Researchers opine that novelty seeking behaviour or consumer innovativeness differs across individuals and it is an individual’s personality trait (Crespo & del Bosque 2008).

It is evident from previous research that internet addiction is associated with novelty seeking and aggression has been associated with online gaming addiction (Mehroof & Griffiths, 2010). There is a direct relationship between novelty seeking and adoption attitude for new products (Hirunyawipada & Paswan, 2006). Novelty seeking behaviour of an individual affects his or her attitude towards seeking information about new products and also plays an important role in adoption of new product. The novelty seekers continually look for new information either about online multimedia game or about the fellow players (Hussain et.al., 2015). Novelty seeking behaviour can be linked with the enjoyment that a consumer experience by trying or adopting new products and services, they search for information about new product launches through various multimedia platforms (Engelland, Hopkins, & Larson 2001).

H5. The inherent novelty seeking behaviour has positive effect on the perceived fun.

H6. The inherent novelty seeking behaviour has positive effect on the attitude towards multiplayer mobile games.

Social Norms

Subjective norms, descriptive norms and social pressure are three social factors that can influence the youth to a high degree (Wu & Liu, 2007). Social factor is one of the highest impacting factors while playing these online games. Social norms tend to be more available in the online games than the offline games (Van Rooij et. al., 2010). The online gamers have a feeling of social integration with fellow members while playing online games (Ducheneaut et. al., 2006). The players of the online game can communicate with their online friends while playing the game (Drachen & Smith, 2008). There is an influence of online friends on the gaming behaviour of the individual (Griffiths & Hunt, 1995). Koo (2009) in their research concluded that there is positive effect of individual social affiliation on his or her intention to play online games Hus & Lu (2004). There is a positive effect of the social norms on the intention to play online games, because the online gamers give importance to the approval of peers and others' while playing online games (Hus & Lu 2004).

H7. The social norms have a positive effect on attitude toward multiplayer mobile games.

H8. The social norms have a positive effect on intention to play multiplayer mobile games.

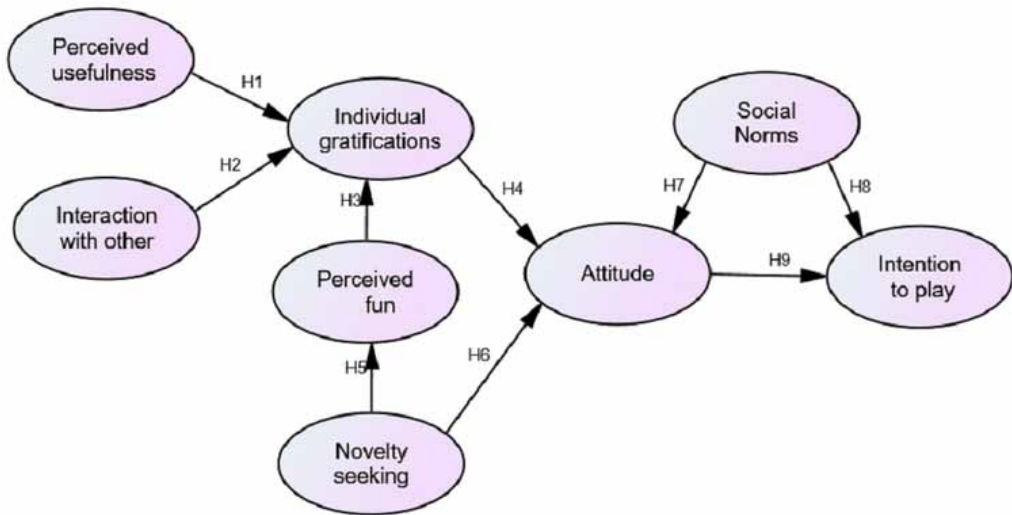
Attitude and Intention to play

In some of the previous researches on TAM, effectiveness and task specificity elements are identified as key determinants of the behavioural intentions in the model for adoption of new technologies for entertainment purposes (Ha et al, 2007; Kim & Forsythe, 2008). The same is evident from Hsu & Lu (2004) that social influence factor and flow experience are conceptualised as precursor of attitude and intention towards personal computer online games. Skills to play and availability of resources to play online games play a key role in shaping the players' attitude towards online games (Kilduff & Krackhardt, 1994). It is evident from previous research that skills to play and availability of resources are the factors influencing attitude towards playing online games (Klimmt & Hartmann, 2006). However the online gamer is likely to play the game if he has persistent favourable attitude and intention towards playing the game resulted from perceived enjoyment and ease to play (Lee 2009; Wu & Liu, 2007; Hsu & Lu 2004). The previous researches suggested a positive relationship between intention to play and attitude towards on line games.

H9. The attitude towards multiplayer mobile games has a positive effect on the intention to play games.

Source: Researcher's own creation

Figure 1. Proposed structural Model



Source: Researcher's own creation

Based on the previous researchers a comprehensive structural model has been developed. The proposed model was developed to investigate the effects of Individual gratifications, Novelty Seeking and social norms on the attitude and intention to play multiplayer mobile games.

METHODOLOGY

This was an empirical study utilizing exploratory cum descriptive type of research design to collect the background information. So, in this section, we discussed the methodology used for exploration of measurement variables and procedure for data collection and analysis. As this study measure the effect of Individual Gratifications, Novelty Seeking and Social Norms on multiplayer mobile game adoption.

Measurement of Variables

The comprehensive list of measures for the scale items was taken from various relevant studies of the online multiplayer game adoption. Eight constructs have been used for developing the structure model related to multiplayer mobile game adoption. Based on the previous studies, four items to measure perceived usefulness (Venkatesh, 2000; Nysveen et al. (2005). Constructs were adopted from original technology adopted model (Davis, 1989). The 'interaction with other' measurement construct included three items were adapted from Hou (2011), Yee (2006). The 'perceived fun' measures taken from Koo (2009) and Wu, Li & Rao (2008) further modify the items for this study. The 'social interaction' items measures adoption from Yee (2006).

Three variables were adopted from Wei & Lu, (2014), Colwell, (2007) to assess the Individual gratification. Further novelty seeking construct (three items) were taken from the previous work of Okazaki et al., 2008; Barnes, 2007; Yee, 2006). The four items social norms measures were taken

from Hus & Lu (2004), Koo (2009). Finally, intention to play measure adapted from previous studies (Venkatesh & Davis, 2000; Hamari & Koivisto, 2013).

Once the initial questionnaire was generated, to further verify the questionnaire, a pre-test was conducted with expert in online gaming field language expert and young respondent who frequently play online multiplayer mobile game. To test the content validity and verify the wordings and appropriateness of the survey instruments, a pretesting procedure was conducted. The pretesting was done with the help of two subject experts in the field of mobile gaming adoption and one language expert. After the suggestion of experts some questions were eliminated because they were not relevant and measure the same aspect. Some questions wording was changed because it creates ambiguity or irrelevant in the context of online game characteristics. Before the instrument fully launched, a pilot study was conducted with the sample of 30 youth participants. The initial construct reliability was assessed with the Cronbach's alpha value. The Cronbach's alpha value of the measurement constructs were 0.78, which exceeded the generally accepted cut-off point of 0.60 (Nunnally, 1987). All the items were measured with a five-point Likert scale (1=strongly disagree, 2=disagree, 3= neutral, 4=agree, 5=strongly agree). Finally, the self-administered questionnaire consisted of 27 items measuring eight latent variables depicted in appendix 1.

Sample and Research Procedure

This empirical study was based on the primary data. The target population of this research was all the youth belongs to NCR region of India, who play multiplayer mobile game. The data was collected from youth (15 to 25 years age group) who play online multi-player mobile games. For define the youth, we accepted the definition given by the United Nation for statistical purpose. The United Nations defines 'youth' who belongs to 15 to 24 years age group.

Youth shows strong passion, motivation towards play the mobile games. Majority of young population play online games and they also interact with other during the game (Sjöblom, M., et.al., 2019). The online survey instrument was used to collect the data from the primary sources. As most of the online mobile game users are internet users that why online survey instrument was adopted (Statista Research Department, 2019). Also, online surveys have enormous advantages over traditional paper-based survey i.e. cost benefit, faster response and participants are not restricted by geographic location (Bhattacharjee, 2001). The web-based questionnaire was divided into two sections. First section includes Demographic Information (Gender, age, family income, Education, Employment status, use of mobile device for online game purpose, time spent for play online multiplayer mobile games, and no. of online mobile games installed in mobile device). The second section comprised of the 27 questions, related to eight measurement constructs.

The online survey was conducted in September and October 2019 at Delhi NCR of India. Convenient sampling technique was used to collecting the suitable sample from total target population. Total 450 questionnaires were sent to target responded. Out of 450, 350 responses were received. After reviewing the received questionnaire those with missing values and other invalid copies were eliminated. A total of 280 questionnaires were found suitable for further analysis. Table 1 presents the demographic characteristics of the sample.

Table 1. Demographic descriptions

Measures	Items	Number	Percentage
Gender	Female	110	39.29
	Male	170	60.71
Age	15 to 20 years	150	53.57
	21 to 24 years	130	46.43
Monthly Family Income (INR)	Less than 50,000	90	32.14
	50,001 to 1,00,000	125	44.64
	Above 1,00,001	65	23.21
Education	Up to 12 th	50	17.86
	Graduate	125	44.64
	Post Graduate	105	37.50
Employment status	Students	135	48.21
	Services employees	75	26.79
	Self-business	70	25.00
Average multi player mobile game playing time per day	Less than 1 hour	35	12.50
	2-4 hours	180	64.29
	More than 4 hours	65	23.21
Number of games in mobile devices	1 to 3	197	70.36
	4 to 6	68	24.29
	More than 6	15	5.36

Source: *Results based on primary survey*

Out of 280 respondents 40 percent respondents belongs to female category and rest of the 60 percent respondents belongs to male category. In terms of age wise distribution of the sample, both the categories of age group i.e. 15 to 20 and 21 to 24 were nearly equal in number. Most respondents had annual family income between 50,000 to 100000 rupees with had graduate degree (45%). As for participants' employment status is concern, 48 percent of the respondents were students, and rest of the 52 percentage respondents were equally belongs to service employees and self-business categories. A majority of respondents (64%) played mobile games average of 2 to 4 hours per day. Majority of respondents (70%) had one to three games on their mobile.

Data Analysis Procedures

Statistical Package for Social Science (SPSS) 22.0 and Analysis of Moment Structures (AMOS) 22.0 software were used for analysing the data and draw the inferences. For identifying the structural causal relationship between various constructs, the structural equation modelling technique is an appropriate tool (Hair et al., 1998). Therefore, this study has also used Structural Equation Modelling (SEM) techniques.

RESULTS AND DISCUSSION

Common Method Bias

Before assessing the reliability and validity of the measurement constructs, we need to check whether data collected from respondents are not suffering from common method bias (Craighead et al., 2011). Common method bias refers to a bias in your dataset due to something external to the measures. CMB occurs when there is divergence between observed and true relationships among constructs or constructs are measured by the same method (Spector, 1987). To evaluate possible CMB, the Harman's single factor test was applied (Malhotra, Kim, & Patil, 2006; Podsakoff et al., 2003). All the items were entered in to single factors and assess through Principal components analysis method using SPSS v.22. The % variance explained by single -factor was found to be 31.681 Which was less than 50 percent suggested by Herman (1967). Therefore, this study was free from common method bias.

Measurement Model

Confirmatory factor analysis with maximum likelihood estimation was used to test the adequacy of the eight constructs measurement model with 27 items using AMOS 22.0. Some common fit indexes were calculated for assessing the adequacy of measurement model. These are Normed Fit Index (NFI), Incremental Fit Index (IFI), Comparative Fit Index (CFI), and root mean square error of approximation (RMSEA) (Hu & Bentler, 1999).

To test the model fit, a chi-square test was performed. The higher chi square probability value is shows the better the model fit. The chi-square and degrees of freedom ratio was found as 24.12 at the significant level of $p < 0.001$, indicating measurement models was acceptable.

In the study, GFI value (0.93) and AGFI value (0.92) was greater than the cut of value i.e. 0.90 and can be perceived as sufficient (Hu & Bentler, 1999). The RMSEA value was found as 0.06 which was less than 0.08 so that it is considered as a perfect goodness of fit (Hu & Bentler, 1999). Values for the SRMR range from zero to 1.0. In this study the SRMR value was found as 0.052, which was greater than the cut off value i.e. 0.08 (Hu & Bentler, 1999).

To test the incremental fit, Normed fit index (NFI), and the comparative fit index (CFI) were used in this study. The NFI and CFI Value should be above 0.90 is good for the model (Hair et al., 1998). The value of NFI and CFI was 0.91 and 0.92, respectively, indicated the structure model was acceptable. The TLI value was 0.96 in this study which was above the cut off value i.e. 0.90. Thus, the values obtained in this study can be considered as sufficient goodness of fit (Brown, 2006).

Convergent validity was assessed to check the degree of measure correlates or converges with another measure of the same construct (Viswanathan, 2005). To investigate the reliability of scales, the confirmatory factor analysis including factor loading, composite reliability, and average variance extracted (AVE) measures were used.

All the confirmatory factor loadings exceeded 0.60, which was show the convergent validity exist (Hair et al., 2006). As Table 2 depicts, the level of internal consistency in each construct was acceptable. Cronbach's alpha demonstrates internal consistency for all the constructs of the measurement model. The Cronbach's alpha values of all the eight constructs were more than 0.60. Normally the Cronbach's alpha values ranging from 0.50 to 0.60 are adequate (Hair et al., 2006). The highest value of Cronbach's alpha was for individual gratification construct i.e. 0.822 and the lowest were for intention to play multiplayer mobile games construct i.e. 0.694.

The composite reliabilities of all the constructs were more than the value of 0.80 representing adequate internal consistency of multiple items for each construct (Hair et al., 2006). Composite reliability scores of latent constructs ranged from 0.850 (attitude toward the mobile game) to 0.90 (novelty seeking). Both the reliability measures were above the recommended value of 0.7 (Fornell & Larcker, 1981).

Furthermore, average variance extracted (AVE) values of all measurement constructs were found more than the minimum criterion of 0.50, indicating a large portion of the variance being explained by

these constructs (Hair et al., 2006). The AVE values of the measurement ranged from 0.60 (perceived usefulness) to 0.72 (intention to play multi player mobile games).

Table 2. Confirmatory factor analysis results

Constructs	Items	Loading	Cronbach's alpha	AVE	CR
Perceived Usefulness (PU)	PU1	0.84	0.792	0.60	0.86
	PU2	0.76			
	PU3	0.79			
	PU4	0.71			
Interaction with other (IWO)	IWO1	0.91	0.702	0.65	0.88
	IWO2	0.75			
	IWO3	0.69			
Perceived Fun (PF)	PF1	0.86	0.789	0.67	0.89
	PF2	0.76			
	PF3	0.73			
Novelty Seeking (NS)	NS1	0.92	0.717	0.69	0.90
	NS2	0.85			
	NS3	0.74			
Individual Gratifications (IG)	IG1	0.82	0.822	0.66	0.89
	IG2	0.77			
	IG3	0.78			
Social Norms (SN)	SN1	0.88	0.714	0.62	0.87
	SN2	0.83			
	SN3	0.76			
	SN4	0.68			
Attitude toward the Mobile Game (ATMG)	ATMG1	0.87	0.776	0.60	0.85
	ATMG2	0.82			
	ATMG3	0.75			
	ATMG4	0.64			
Intention to Play (ITP)	ITP1	0.93	0.694	0.72	0.89
	ITP2	0.86			
	ITP3	0.75			
Source: Results based on primary survey					

Discriminant validity was assessed to show the degree of two or more conceptually similar concepts are different from other (Hair et al., 2006). To assess the discriminant validity, the correlations between the constructs should be either positive or negative, or close to zero (Kline, 2005). Another criterion of assess the discriminant validity is the AVE from the construct which should be greater

than the variance shared between the construct and other constructs in the model and each squared correlation should be smaller than the square root of AVE (Fornell & Larcker, 1981).

Table 3. Discriminant Validity

Constructs	AVE	PU	IWO	PF	NS	IG	SN	ATMG	ITP
PU	0.603	0.776							
IWO	0.652	.407	0.807						
PF	0.674	.521	.426	0.821					
NS	0.697	.216	.201	.548	0.835				
IG	0.662	.656	.462	.459	.583	0.814			
SN	0.626	.493	.341	.400	.358	.418	0.791		
ATMG	0.600	.546	.361	.418	.550	.463	.479	0.775	
ITP	0.722	.356	.422	.482	.439	.586	.420	.534	0.850

Note. Square root of average variance extracted (AVE) is shown on the diagonal of the matrix.

Source: *Results based on primary survey*

Furthermore, Table 3 shows that all the correlations between constructs were less than 0.90 as suggested by Hair et al. (2006). Also, the square root of AVE of each construct was greater than the construct's correlations with other constructs, which also indicates good convergent and discriminant validity (Fornell & Larcker, 1981).

Structural Model

AMOS 22.0 statistical software was used to test of structural model. To check the strength of the relationships between the independent and dependent variables, the goodness-of-fit indices and the path coefficients were estimated. The Goodness of model fits were estimated using normed chi-square (χ^2/df), SRMR, NFI, NNFI, CFI, and RMSEA. The values of model fit indices for the structural model are presented in table 3. Normed chi-square value was 3.72 ($\chi^2=104.16$, $df=28$) which was less than 5.0, consider as a acceptable fit (Kline, 1998). Also, the SRMR value (0.040) was less than 0.08 consider as a acceptable fit (Byrne, 1989). The RMSEA value was 0.062, which was less than the threshold of 0.08 for acceptable fit (Hu & Bentler, 1999).

Also, the value of the incremental fit indices of the structural model (0.92 for the GFI, 0.96 for the NNFI, and 0.95 for the CFI) were greater than the cut off value i.e. 0.9, thus indicating an acceptable fit between model and data.

Hypothesis Test

All the nine hypotheses were tested using structural equation modelling analysis. The standardized path coefficients of the hypothesised model show the strengths of path relationship. The standardized path coefficients between the constructs were presented in table 4. The standardised path coefficient revealed that out of nine hypothesized causal paths, eight were statistically significant at a 0.001 level and one was not significant at a 0.01 level.

Table 4. Results of structural model

Hypothesised path	Hypothesis	Estimated Coefficient	T-value	Result
Perceived usefulness ® Individual gratification	H1	0.042	0.818	Not Supported
Interaction with other ® individual gratification	H2	0.358	7.464***	Supported
Perceived fun ® individual gratification	H3	0.398	8.445***	Supported
Individual gratification ® attitude toward multiplayer mobile games	H4	0.243	4.876***	Supported
Inherent novelty seeking behaviour ® perceived fun	H5	0.273	5.510***	Supported
Inherent novelty seeking behaviour ® attitude toward multiplayer mobile games	H6	0.485	10.774***	Supported
Social norms ® attitude toward multiplayer mobile games	H7	0.233	4.652***	Supported
Social norms ® intention to play multiplayer mobile games	H8	0.419	8.972***	Supported
Attitude toward multiplayer mobile games ® intention to play games	H9	0.258	5.188***	Supported

Notes: *** means $P < 0.001$; $\chi^2/df = 3.72$; GFI = 0.92, AGFI = 0.904; RMSEA = 0.062, SRMR = 0.045; CFI = 0.95, NNFI = 0.96. Source: *Results based on primary survey*

The first hypothesis investigated the effect of perceived usefulness of multiplayer mobile games on individual gratification. The estimated coefficient (0.042) was not found significant. The critical ratio (0.818) value indicating that perceived usefulness of multiplayer mobile games does not have a positive effect on individual gratification. The second hypothesis i.e. ‘*The interaction with other on multiplayer mobile games has a positive effect on the individual gratification*’ was supported with a 0.358 estimated coefficient value with critical ratio of 7.464 at the significant level of 0.001. This indicates that interaction with other while playing multiplayer mobile games provoke the individual gratification. These two hypotheses have similar finding obtained by Wei & Lu (2014) in the specific case of mobile social games adoption. The third hypothesis was regarding the positive effect of perceived fun on the individual gratification. The estimated coefficient value was 0.398, which was significant at 0.001 level indicating that perceived fun has a positive effect on individual gratification. The fourth hypothesis i.e. ‘*The inherent novelty seeking among the youth has a positive effect on the perceived fun*’ was also supported as the estimated coefficient value (0.273 and critical ratio value (5.510) were significant at 0.001 level. This result indicate novelty seeking behavior of young multi player mobile games user positively affect the perceived fun. The fifth, sixth and seventh hypothesizes were developed to investigate the effect of individual gratification, inherent novelty seeking behavior and social norms on attitude towards multiplayer mobile games adoption. The result indicate that individual gratification of the youth has positive effect on attitude toward multiplayer mobile games (estimated coefficient= 0.243, $p < 0.01$ and critical ratio = 4.876). Similarly, inherent novelty seeking among the youth (estimated coefficient value = 0.4853 and critical ratio value =10.774) and social norms (estimated coefficient value = 0.233 and critical ratio value =4.652) have positive effect on attitude toward online multiplayer mobile games adoption. The eighth and ninth hypotheses investigated the effect of social norms and attitude towards multiplayer mobile games on the intention to play games. The analysis showed that both the hypotheses were significant at the 0.001 level. The social norms (estimated coefficient= 0.419, $p < 0.01$ and critical ratio = 8.972) and the attitude toward multiplayer mobile games (estimated coefficient= 0.258, $p < 0.01$ and critical ratio = 5.188) have positive effect on the intention to play games.

DISCUSSION AND MANAGERIAL IMPLICATION

The rapid progression of the online gaming and entertainment business has caught the interest of various researchers to investigate the predictors for multiplayer mobile game adoption. In line with this, the current study attempted to explore the role of gratification, novelty seeking and social norms on the intention to play online multiplayer games by youth. The findings of this paper test a theoretical model derived from TAM, U&G and the flow theories in which gratification of various humanistic needs such as interaction, perceived fun and perceived usefulness are important determinants for intention and adoption towards multiplayer mobile games. Further, the findings of the study suggest that there is a significant impact of social interaction and novelty seeking on the user's intention to play online multiplayer games. In addition, this study also concludes that social norms play an important role in creating an intention to play multiplayer online games. In earlier researches a weaker relationship is evident, with a possible reason that they referred to social network games (Chang, 2013) and mobile social games (Wei & Lu, 2014), where the interaction with other players is limited, whereas this study relates to multiplayer mobile games.

The findings of the study will help to develop a conceptual understanding of various motives for intention to play multiplayer mobile games. Furthermore, the present study gives its contribution to the existing literature by facilitating the understanding of gratification, novelty seeking and social norms as predictors of intention to adopt MPMG (Multiplayer mobile games). Also, this study contributes to the existing literature by highlighting the human-game-technology interaction. Further this study is anovel study which incorporates three dimensions such as gratification, novelty seeking and social norms in order to predict the online multiplayer mobile game adoption.

The study will be helpful for scholarly researchers to explore new dimensions in determining factors which influence the intention of the players in this rapidly changing market environment and mobile gaming app industry.

In terms of the managerial implication of the study is concerned, the multiplayer mobile games provide full entertainment, novelty seeking and interaction facilities, so game designer should be focused on enhancing these aspects in virtual games and utilize new technology and graphic which can increase the attractiveness of mobile game and create a sound image in the mind of young user. Further mobile game developers should focus on highlighting social aspects while designing and incorporating more interactive mechanism for better networking function so that it infuses a creative and playful atmosphere for the players. Hence, the players in turn find the game interesting, fun loving and fulfilling their social needs, they tend to spend more time on it.

As social interaction emerged as a significant factor in playing multiplayer mobile games, hence the 'word of mouth' strategy can help the developers to create a game and which focuses on creating an interactive environment so that more and more users intended to play the game.

Further, another practical contribution of the study is the finding that time flexibility variable has a lesser impact on the intention to play the mobile game. it implies that if the player perceives enjoyment & fun he continues to play the game and time flexibility cannot be a motivating factor on the other hand it is an opportunity for the marketing practitioners to make money by selling indirect advertising on the multi-player mobile game portal. The advertisers should design in such a way that it does not distract the player instead popularity of the game will retain the attention of the players.

Games possess a great potential to promote learning and advertising the brand in terms of in game advertising among youth. So, marketing manager should focus on new strategies to promote the brand in gaming platform. The study provides an insight to develop marketing strategies for the games. Also, game designer should focus on improving multiplatform connections so that players can interact outside of the game, through social networks and even in offline environments.

The study on multiplayer mobile games is socially significant in a way that creates an environment for learning at multiple levels and forms. The dynamics of the games where the users have to assimilate embedded information and analyse the rewards and risk from alternative strategies adopted while

playing the game. On the one hand it not only improves the decision-making skills but also facilitates team work and leadership skills by delegating / sharing of the authority. In the current scenario these games are not only a platform for entertainment but also an important communication method for improving team efficacy through collective performance.

The research unveils the pragmatic impact of multiplayer game among the youth. The findings of the study will aid the game designers to strengthen gamer's perception and sense of knowledge by adding more status information, gaming options (Ng & Wiemer-Hastings, 2005).

CONCLUSION, LIMITATIONS AND FURTHER RESEARCH

The purpose of this research paper was to examine the effect of individual gratifications, novelty seeking and social norms on multiplayer mobile game adoption in the context of Indian youth. The structure model confirms that only one hypothesis i.e. perceived usefulness of multiplayer mobile games does not have a positive effect on individual gratification and rest of the hypotheses i.e. interaction with other on multiplayer mobile games, perceived fun have positive effect on individual gratification. Further inherent novelty seeking behaviour positively affects the perceived fun. Similarly, individual gratification, inherent novelty seeking behavior and social norms have positive effect on attitude toward multiplayer mobile games. Lastly social norms and attitude towards multiplayer mobile games have witnessed positive effect on the intention to play games.

This research has developed our understanding of the various factors which influence the multiplayer mobile game adoption. Further this study confirmed gratifications, novelty seeking and social norms play vital roles for the adoption of multiplayer mobile games among Indian youth. This research has enriched the understanding of the determinants and literature on multiplayer mobile game adoption. Apart from this, the research had a number of limitations. The first limitation of this study based on the methodological aspect. As the sample size is not large and data were collected from NCR region of India through convenience sampling method. The study focuses only on Indian multiplayer mobile game users and belongs to young age categories. Thus, it can be said that there is a scope of further research to establish that whether the patterns of effects emerged from these results are generalizable across countries and different user groups. Secondly, this study only examines the direct effect of individual gratifications, novelty seeking and social norms on multiplayer mobile game adoption. The research can be extended further on certain characteristics of users like gender, age, time spend on playing, and moderate the relationships between the variables of the model.

The present research did not incorporate 'challenge' and 'competition' as a construct whereas Sherry et al., (2006) found that the two most often reported reason for playing video games are 'competition and challenge'. Rubin, (1981) confirmed that there is a three factor structures to have a motive for playing on line games. These factors are escapism, enjoyment and competition. So, 'challenge and competition' can be incorporate for further research on multiplayer mobile game adoption.

Furthermore, some studies have shown that gratification leads to loyalty towards online games (Huang & Hsieh, 2011). Hence further research can be conducted on nexus between gratification, multiplayer mobile game adoption and loyalty toward game.

Finally, it can be affirmed by the findings of the study that social interaction is a key factor but it can be further explored in terms of personality type and lifestyle. Personality type can be a factor for prediction of frequency and preferences towards online games. The further research can be undertaken to broaden understanding towards influence of personality type and lifestyle as a social dimension for mobile gaming adoption and intention to play those games.

Another important factor which can be focused is the 'network externalities Wei & Lu (2014). It can be a relevant factor for future research as a social factor that may influence the intention to play social mobile games. Hence investigation of this factor can have a scope for further research.

An important research issue is to understand the behaviour of the online mobile game players. (Huang & Hsieh, 2011). So, further research could be conducted on the understanding of the player behavior with different types of multiplayer games. Apart from this, the research model developed in this study can be further replicated by another country in order to generalize the model.

REFERENCES

- Agarwal, R., & Karahanna, E. (2000). Time flies when you're having fun: Cognitive absorption and beliefs about information technology usage. *Management Information Systems Quarterly*, 24(4), 665–694. doi:10.2307/3250951
- Agarwal, R., & Prasad, J. (1998). The antecedents and consequents of user perceptions in information technology adoption. *Decision Support Systems*, 22(1), 15–29. doi:10.1016/S0167-9236(97)00006-7
- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50(2), 179–211. doi:10.1016/0749-5978(91)90020-T
- Bandura, A. (1982). The assessment and predictive generality of self-percepts of efficacy. *Journal of Behavior Therapy and Experimental Psychiatry*, 13(3), 195–199. doi:10.1016/0005-7916(82)90004-0 PMID:7142408
- Barnes, S. (2007). Virtual worlds as a medium for advertising. *ACM SIGMIS Database: the DATABASE for Advances in Information Systems*, 38(4), 45–55. doi:10.1145/1314234.1314244
- Brown, S. A., Venkatesh, V., & Bala, H. (2006). Household technology use: Integrating household life cycle and the model of adoption of technology in households. *The Information Society*, 22(4), 205–218. doi:10.1080/01972240600791333
- Byrne, B. M., Shavelson, R. J., & Muthén, B. (1989). Testing for the equivalence of factor covariance and mean structures: The issue of partial measurement invariance. *Psychological Bulletin*, 105(3), 456–466. doi:10.1037/0033-2909.105.3.456
- Chang, M. K., Cheung, W., & Tang, M. (2013). Building trust online: Interactions among trust building mechanisms. *Information & Management*, 50(7), 439–445. doi:10.1016/j.im.2013.06.003
- Cheung, G., & Huang, J. (2011, May). Starcraft from the stands: understanding the game spectator. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems* (pp. 763–772). ACM. doi:10.1145/1978942.1979053
- Chiang, C. H., & Lin, H. Y. (2013). Analyzing behaviors influencing the adoption of online games from the perspective of virtual contact. *Social Behavior and Personality*, 41(1), 113–122. doi:10.2224/sbp.2013.41.1.113
- 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. doi:10.1089/109493104322820066 PMID:15006164
- Chou, C., & Tsai, M. J. (2007). Gender differences in Taiwan high school students' computer game playing. *Computers in Human Behavior*, 23(1), 812–824. doi:10.1016/j.chb.2004.11.011
- Christy, T., & Kuncheva, L. I. (2014). Technological advancements in affective gaming: A historical survey. *GSTF Journal on Computing*, 3(4), 32–41. doi:10.7603/s40601-013-0038-5
- Cole, H., & Griffiths, M. D. (2007). Social interactions in massively multiplayer online role-playing gamers. *Cyberpsychology & Behavior*, 10(4), 575–583. doi:10.1089/cpb.2007.9988 PMID:17711367
- Colwell, J. (2007). Needs met through computer game play among adolescents. *Personality and Individual Differences*, 43(8), 2072–2082. doi:10.1016/j.paid.2007.06.021
- Compeau, D., Higgins, C. A., & Huff, S. (1999). Social cognitive theory and individual reactions to computing technology: A longitudinal study. *Management Information Systems Quarterly*, 23(2), 145–158. doi:10.2307/249749
- Craighead, C. W., Ketchen, D. J., Dunn, K. S., & Hult, G. T. M. (2011). Addressing common method variance: Guidelines for survey research on information technology, operations, and supply chain management. *IEEE Transactions on Engineering Management*, 58(3), 578–588. doi:10.1109/TEM.2011.2136437
- Crespo, Á. H., & del Bosque, I. R. (2008). The effect of innovativeness on the adoption of B2C e-commerce: A model based on the Theory of Planned Behavior. *Computers in Human Behavior*, 24(6), 2830–2847. doi:10.1016/j.chb.2008.04.008
- Csikszentmihalyi, M., & Csikszentmihalyi, M. (1991). *Flow: The psychology of optimal experience* (Vol. 41). Harper Perennial.

- Curry, O., Roberts, S. G., & Dunbar, R. I. (2013). Altruism in social networks: Evidence for a 'kinship premium'. *British Journal of Psychology*, 104(2), 283–295. doi:10.1111/j.2044-8295.2012.02119.x PMID:23560672
- Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *Management Information Systems Quarterly*, 13(3), 319–340. doi:10.2307/249008
- Davis, F. D., & Warshaw, P. R. (1992). What do intention scales measure? *The Journal of General Psychology*, 119(4), 391–407. doi:10.1080/00221309.1992.9921181
- Drachen, A., & Smith, J. H. (2008). Player talk—The functions of communication in multiplayer role-playing games. *Computers in Entertainment*, 6(4), 1–36. doi:10.1145/1461999.1462008
- Ducheneaut, N., Yee, N., Nickell, E., & Moore, R. J. (2006, April). "Alone together?" Exploring the social dynamics of massively multiplayer online games. In *Proceedings of the SIGCHI conference on Human Factors in computing systems* (pp. 407–416). ACM. doi:10.1145/1124772.1124834
- Engelland, B. T., Hopkins, C. D., & Larson, D. A. (2001). Market mavenship as an influencer of service quality evaluation. *Journal of Marketing Theory and Practice*, 9(4), 15–26. doi:10.1080/10696679.2001.11501900
- Fishbein, M., & Ajzen, I. (1975). *Belief, attitude, intention, and behavior: An introduction to the theory and research*. Addison-Wesley.
- Florenthal, B., Wayne, N. J., Dykhous, M., & Student, U. H. (2012). How College Students Use LinkedIn, Why Some Do Not Use It, and Why It Is Important. *Marketing EDGE Direct/Interactive Research Summit*.
- Fornell, C., & Larcker, D. F. (1981). *Structural equation models with unobservable variables and measurement error: Algebra and statistics*. Academic Press.
- Giddings, S. (2016). Virtual reality. *The International Encyclopedia of Communication Theory and Philosophy*, 1–5.
- Griffiths, M. D., & Hunt, N. (1995). Computer game playing in adolescence: Prevalence and demographic indicators. *Journal of Community & Applied Social Psychology*, 5(3), 189–193. doi:10.1002/casp.2450050307
- Ha, I., Yoon, Y., & Choi, M. (2007). Determinants of adoption of mobile games under mobile broadband wireless access environment. *Information & Management*, 44(3), 276–286. doi:10.1016/j.im.2007.01.001
- Hai, L. C., & Alam Kazmi, S. H. (2015). Dynamic support of government in online shopping. *Asian Social Science*, 11(22).
- Hair, J. F., Black, W. C., Babin, B. J., Anderson, R. E., & Tatham, R. L. (1998). *Multivariate data analysis*. Prentice Hall.
- Hair, J. F., Black, W. C., Babin, B. J., Anderson, R. E., & Tatham, R. L. (2006). *Multivariate data analysis* (Vol. 6). Pearson Prentice Hall.
- Hamari, J., & Koivisto, J. (2013, June). Social Motivations To Use Gamification: An Empirical Study Of Gamifying Exercise. In *ECIS* (Vol. 105). Academic Press.
- Hamari, J., & Sjöblom, M. (2017). Why do people watch others play video games? An empirical study on the motivations of Twitch users. *Computers in Human Behavior*, 75, 985–996. doi:10.1016/j.chb.2016.10.019
- Harman, D. (1967). A single factor test of common method variance. *The Journal of Psychology*, 35, 359–378.
- Hirschman, E. C. (1980). Innovativeness, novelty seeking, and consumer creativity. *The Journal of Consumer Research*, 7(3), 283–295. doi:10.1086/208816
- Hirunyawipada, T., & Paswan, A. K. (2006). Consumer innovativeness and perceived risk: Implications for high technology product adoption. *Journal of Consumer Marketing*, 23(4), 182–198. doi:10.1108/07363760610674310
- Hmieleski, K. M., & Baron, R. A. (2009). Entrepreneurs' optimism and new venture performance: A social cognitive perspective. *Academy of Management Journal*, 52(3), 473–488. doi:10.5465/amj.2009.41330755
- Hojjati, S. N., & Khodakarami, M. (2016). Evaluation of factors affecting the adoption of smart buildings using the technology acceptance model. *International Journal of Advanced Networking and Applications*, 7(6), 2936.

- Hou, J. (2011). Uses and gratifications of social games: Blending social networking and game play. *First Monday*, 16(7). Advance online publication. doi:10.5210/fm.v16i7.3517
- Hsu, C. L., & Lin, J. C. C. (2008). Acceptance of blog usage: The roles of technology acceptance, social influence and knowledge sharing motivation. *Information & Management*, 45(1), 65–74. doi:10.1016/j.im.2007.11.001
- Hsu, C. L., & Lu, H. P. (2004). Why do people play on-line games? An extended TAM with social influences and flow experience. *Information & Management*, 41(7), 853–868. doi:10.1016/j.im.2003.08.014
- Hu, L. T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling*, 6(1), 1–55. doi:10.1080/10705519909540118
- Huang, L. Y., & Hsieh, Y. J. (2011). Predicting online game loyalty based on need gratification and experiential motives. *Internet Research*, 21(5), 581–598. doi:10.1108/10662241111176380
- Hussain, Z., Williams, G. A., & Griffiths, M. D. (2015). An exploratory study of the association between online gaming addiction and enjoyment motivations for playing massively multiplayer online role-playing games. *Computers in Human Behavior*, 50, 221–230. doi:10.1016/j.chb.2015.03.075
- Im, S., Bayus, B. L., & Mason, C. H. (2003). An empirical study of innate consumer innovativeness, personal characteristics, and new-product adoption behavior. *Journal of the Academy of Marketing Science*, 31(1), 61–73. doi:10.1177/0092070302238602
- Jansz, J., & Martens, L. (2005). Gaming at a LAN event: The social context of playing video games. *New Media & Society*, 7(3), 333–355. doi:10.1177/1461444805052280
- Kang, K., Lu, J., Guo, L., & Zhao, J. (2019). How to Improve Customer Engagement: A Comparison of Playing Games on Personal Computers and on Mobile Phones. *Journal of Theoretical and Applied Electronic Commerce Research*, 15(2), 76–92.
- Karahanna, E., & Limayem, M. (2000). E-mail and v-mail usage: Generalizing across technologies. *Journal of Organizational Computing and Electronic Commerce*, 10(1), 49–66. doi:10.1207/S15327744JOCE100103
- Katz, E., Haas, H., & Gurevitch, M. (1973). On the use of the mass media for important things. *American Sociological Review*, 38(2), 164–181. doi:10.2307/2094393
- Kilduff, M., & Krackhardt, D. (1994). Bringing the individual back in: A structural analysis of the internal market for reputation in organizations. *Academy of Management Journal*, 37(1), 87–108.
- Kim, G. S., Park, S. B., & Oh, J. (2008). An examination of factors influencing consumer adoption of short message service (SMS). *Psychology and Marketing*, 25(8), 769–786. doi:10.1002/mar.20238
- Kim, J., & Forsythe, S. (2008). Adoption of virtual try-on technology for online apparel shopping. *Journal of Interactive Marketing*, 22(2), 45–59. doi:10.1002/dir.20113
- Klimmt, C., & Hartmann, T. (2006). Effectance, self-efficacy, and the motivation to play video games. *Playing video games: Motives, responses, and consequences*, 133–145.
- Kline, R. B. (1998). Software review: Software programs for structural equation modeling: Amos, EQS, and LISREL. *Journal of Psychoeducational Assessment*, 16(4), 343–364. doi:10.1177/073428299801600407
- Koo, D. M. (2009). The moderating role of locus of control on the links between experiential motives and intention to play online games. *Computers in Human Behavior*, 25(2), 466–474. doi:10.1016/j.chb.2008.10.010
- Krotoski, A. (2004). *Online Games, Offline Selves* (Diss.). University of Surrey.
- Lee, M. C. (2009). Understanding the behavioural intention to play online games. *Online Information Review*, 33(5), 849–872. doi:10.1108/14684520911001873
- Lee, S., & Quan, C. F. (2013). Factors affecting Chinese ubiquitous game service usage intention. *International Journal of Mobile Communications*, 11(2), 194–212. doi:10.1504/IJMC.2013.052641
- Li, H., Liu, Y., Xu, X., Heikkilä, J., & Van Der Heijden, H. (2015). Modeling hedonic is continuance through the uses and gratifications theory: An empirical study in online games. *Computers in Human Behavior*, 48, 261–272. doi:10.1016/j.chb.2015.01.053

Malhotra, N. K., Kim, S. S., & Patil, A. (2006). Common method variance in IS research: A comparison of alternative approaches and a reanalysis of past research. *Management Science*, 52(12), 1865–1883. doi:10.1287/mnsc.1060.0597

Mandryk, R. L., Inkpen, K. M., & Calvert, T. W. (2006). Using psychophysiological techniques to measure user experience with entertainment technologies. *Behaviour & Information Technology*, 25(2), 141–158. doi:10.1080/01449290500331156

Martocchio, J. J., & Webster, J. (1992). Effects of feedback and cognitive playfulness on performance in microcomputer software training. *Personnel Psychology*, 45(3), 553–578. doi:10.1111/j.1744-6570.1992.tb00860.x

Mehroof, M., & Griffiths, M. D. (2010). Online gaming addiction: The role of sensation seeking, self-control, neuroticism, aggression, state anxiety, and trait anxiety. *Cyberpsychology, Behavior, and Social Networking*, 13(3), 313–316. doi:10.1089/cyber.2009.0229 PMID:20557251

Mun, Y. Y., & Hwang, Y. (2003). Predicting the use of web-based information systems: Self-efficacy, enjoyment, learning goal orientation, and the technology acceptance model. *International Journal of Human-Computer Studies*, 59(4), 431–449. doi:10.1016/S1071-5819(03)00114-9

Neys, J. L., Jansz, J., & Tan, E. S. (2014). Exploring persistence in gaming: The role of self-determination and social identity. *Computers in Human Behavior*, 37, 196–209. doi:10.1016/j.chb.2014.04.047

Ng, B. D., & Wiemer-Hastings, P. (2005). Addiction to the internet and online gaming. *Cyberpsychology & Behavior*, 8(2), 110–113. doi:10.1089/cpb.2005.8.110 PMID:15938649

Nunnally, S. W., & Nunnally, S. W. (1987). *Construction methods and management*. Prentice-Hall.

Nysveen, H., Pedersen, P. E., & Thorbjørnsen, H. (2005). Intentions to use mobile services: Antecedents and cross-service comparisons. *Journal of the Academy of Marketing Science*, 33(3), 330–346. doi:10.1177/0092070305276149

Petty, R. E., & Wegener, D. T. (1999). The elaboration likelihood model: Current status and controversies. *Dual-Process Theories in Social Psychology*, 1, 37-72.

Podsakoff, P. M., MacKenzie, S. B., Lee, J. Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. *The Journal of Applied Psychology*, 88(5), 879–903. doi:10.1037/0021-9010.88.5.879 PMID:14516251

Rauschnabel, P. A., Rossmann, A., & tom Dieck, M. C. (2017). An adoption framework for mobile augmented reality games: The case of Pokémon Go. *Computers in Human Behavior*, 76, 276–286. doi:10.1016/j.chb.2017.07.030

Robinson, M. J., Trail, G. T., Dick, R. J., & Gillentine, A. J. (2005). Fans vs. Spectators: An Analysis of Those Who Attend Intercollegiate Football Games. *Sport Marketing Quarterly*, 14(1).

Roy, D. P., & Goss, B. D. (2007). A conceptual framework of influences on fantasy sports consumption. *Marketing Management Journal*, 17(2).

Rubin, D. B. (1981). The bayesian bootstrap. *Annals of Statistics*, 130–134.

Seo, Y., Buchanan-Oliver, M., & Fam, K. S. (2015). Advancing research on computer game consumption: A future research agenda. *Journal of Consumer Behaviour*, 14(6), 353–356. doi:10.1002/cb.1557

Sherlock, L. M. (2007, October). When social networking meets online games: the activity system of grouping in world of warcraft. In *Proceedings of the 25th annual ACM international conference on Design of communication* (pp. 14-20). ACM. doi:10.1145/1297144.1297148

Sherry, J., & Pacheco, A. (2006). Matching computer game genres to educational outcomes. *Electronic Journal of Communication/La Revue Electronique de Communication*, 16(1-2).

Shin, D. H., & Shin, Y. J. (2011). Why do people play social network games? *Computers in Human Behavior*, 27(2), 852–861. doi:10.1016/j.chb.2010.11.010

- Sjöblom, M., Törhönen, M., Hamari, J., & Macey, J. (2019). The ingredients of Twitch streaming: Affordances of game streams. *Computers in Human Behavior*, 92, 20–28. doi:10.1016/j.chb.2018.10.012
- Spector, P. E. (1987). Method variance as an artifact in self-reported affect and perceptions at work: Myth or significant problem? *The Journal of Applied Psychology*, 72(3), 438–443. doi:10.1037/0021-9010.72.3.438
- Statista Research Department. (2019). *Online gaming in India*. <https://www.statista.com/statistics/739508/number-of-mobile-gamers-india/>
- Su, Y. S., Chiang, W. L., Lee, C. T. J., & Chang, H. C. (2016). The effect of flow experience on player loyalty in mobile game application. *Computers in Human Behavior*, 63, 240–248. doi:10.1016/j.chb.2016.05.049
- Torres, R., & Gerhart, N. (2019). Mobile proximity usage behaviors based on user characteristics. *Journal of Computer Information Systems*, 59(2), 161–170. doi:10.1080/08874417.2017.1320954
- Van Rooij, A. J., Meerkkerk, G.-J., Schoenmakers, T. M., Griffiths, M., & van de Mheen, D. (2010). Video game addiction and social responsibility. *Addiction Research and Theory*, 18(5), 489–493. doi:10.3109/16066350903168579
- Vashisht, D., & Royne, M. B. (2016). Advergame speed influence and brand recall: The moderating effects of brand placement strength and gamers' persuasion knowledge. *Computers in Human Behavior*, 63, 162–169. doi:10.1016/j.chb.2016.05.022
- Venkatesh, V., & Davis, F. D. (2000). A theoretical extension of the technology acceptance model: Four longitudinal field studies. *Management Science*, 46(2), 186–204. doi:10.1287/mnsc.46.2.186.11926
- Venkatraman, M. P. (1991). The impact of innovativeness and innovation type on adoption. *Journal of Retailing*, 67(1), 51.
- Viswanathan, S. (2005). Competing across technology-differentiated channels: The impact of network externalities and switching costs. *Management Science*, 51(3), 483–496. doi:10.1287/mnsc.1040.0338
- Wang, W. T., & Li, H. M. (2012). Factors influencing mobile services adoption: A brand-equity Perspective. *Internet Research*, 22(2), 142–179. doi:10.1108/10662241211214548
- Wei, P. S., & Lu, H. P. (2014). Why do people play mobile social games? An examination of network externalities and of uses and gratifications. *Internet Research*, 24(3), 313–331. doi:10.1108/IntR-04-2013-0082
- Wu, J., Li, P., & Rao, S. (2008). Why they enjoy virtual game worlds? An empirical investigation. *Journal of Electronic Commerce Research*, 9(3), 219–230.
- Wu, J., & Liu, D. (2007). The effects of trust and enjoyment on intention to play online games. *Journal of Electronic Commerce Research*, 8(2).
- Wu, J. H., Wang, S. C., & Tsai, H. H. (2010). Falling in love with online games: The uses and gratifications perspective. *Computers in Human Behavior*, 26(6), 1862–1871. doi:10.1016/j.chb.2010.07.033
- Yee, N. (2006). The demographics, motivations, and derived experiences of users of massively multi-user online graphical environments. *Presence (Cambridge, Mass.)*, 15(3), 309–329. doi:10.1162/pres.15.3.309
- Yeh, N. C., Lin, J. C. C., & Lu, H. P. (2011). The moderating effect of social roles on user behaviour in virtual worlds. *Online Information Review*, 35(5), 747–769. doi:10.1108/14684521111176480
- Zhang, J., & Mao, E. (2008). Understanding the acceptance of mobile SMS advertising among young Chinese consumers. *Psychology and Marketing*, 25(8), 787–805. doi:10.1002/mar.20239

APPENDIX A: QUESTIONNAIRE INSTRUMENT

Constructs	Items	Code	Sources
Perceived Usefulness (PU)	Playing the mobile game enables me to feel relaxed in a better way	PU1	Davis, (1989) Venkatesh, (2000); Nysveen et al. (2005).
	Playing the mobile game improves my gaming ability	PU2	
	Playing the mobile game improves my productivity in doing other things.	PU3	
	Overall, I found the mobile game useful.	PU4	
Interaction with other (IWO)	I think playing multiplayer mobile games enables me to interact with other	IWO1	Hou (2011), Yee (2006)
	I think playing multiplayer mobile games fulfill my need for interacting with others	IWO2	
	I think playing multiplayer mobile games increases my opportunities to interact with others	IWO3	
Perceived fun (PF)	I find the mobile game application very entertaining.	PF1	Koo (2009) and Wu, J., Li, P., & Rao, S., (2008)
	Playing the mobile game is always a fun for me.	PF2	
	Playing the mobile game is truly a joy.	PF3	
Novelty seeking (NS)	I am willing to take risks when I play the mobile game, because it is innovative.	NS1	Okazaki et al. (2008); Barnes, (2007); Yee, (2006)
	Mobile game I play contains original ideas.	NS2	
	Mobile game I play is really stimulating.	NS3	
Individual gratifications (IG)	Playing the game helped me to interact with a lot of people	IG1	Wei & Lu, (2014), Colwell, (2007)
	Playing the mobile game improves my productivity in doing other things.	IG2	
	Continuous uninvited comments of the opponent players irritate me.	IG3	
Social norms (SN)	I play this game because all my friends play	SN1	Hus & Lu (2004), Koo (2009).
	All the people now a days play this game	SN2	
	Playing the mobile game enable me to improve my social status	SN3	
	All my friend expects me to play this game	SN4	
Attitude toward the mobile game (ATMG)	I feel good about playing this mobile game.	ATMG1	Hsu & Lu (2004); Wu, J., & Liu, D., (2007), Lee (2009)
	This mobile game has many advantages.	ATMG2	
	Playing these mobile games is a pleasant experience.	ATMG3	
	Overall, this mobile game is worthy for me.	ATMG4	
Intention to play (ITP)	I intend to play multiplayer mobile game in the near future.	ITP1	Venkatesh & Davis, (2000); Hamari& Koivisto, (2013)
	I will play multiplayer mobile game on a regular basis.	ITP2	
	I will take the initiative to play multiplayer games.	ITP3	

All questionnaire items were measured with a five -point Likert scale (1= strongly disagree to 5= strongly agree).

Saurabh Gupta has a PhD in Management from Banaras Hindu University, Varanasi and has 8 years of research and teaching experience. Currently he is an Assistant Professor in the field of marketing and strategy at Jaipuria Institute of Management, Ghaziabad, India. His teaching interests include Consumer Behaviour, Strategic Service Marketing, Marketing Research, and Multivariate data Analysis. He has edited one book in the area of Tourism Management. He has published many research papers in national and international journals including book chapters. He is an active researcher and his scholarly contributions are in the area of consumer behavior, services marketing and strategic marketing. He is well acquainted with the various statistical softwares such as SPSS, AMOS, STATA, MS Excel, etc.

Nidhi Mathur is currently an Associate professor at Jaipuria Institute of Management, Indrapuram Ghaziabad. She received her doctorate degree from Barkatulla Vishvavidyalay, Bhopal. She holds MBA from Devi Ahilyabi University, Indore. She is also a NET qualified in Management. She has over 16 years of teaching and research experience. She has published various research articles, case studies in Scopus and other reputed Journals. She has participated in various seminars, conferences, FDP Programmes and Workshops. She has also organized FDPs, Seminars and Conferences.