The Eurasia Proceedings of
Educational & Social Sciences (EPESS)
ISSN: 2267-1730

The Eurasia Proceedings of Educational & Social Sciences (EPESS), 2023

Volume 31, Pages 92-98

ICRESS 2023: International Conference on Research in Education and Social Sciences

A Comparative Study on VR Games in terms of Digital Media Users

Hande Tercan-Bingol
Yeditepe University

Emel Karayel-Bilbil
Marmara University

Abstract: Digital media users, who have integrated digital technologies into their daily lives, represent a broad spectrum of age groups and backgrounds. Digital natives, commonly referred to as individuals who were born and raised in the digital era, have grown up surrounded by digital technologies and are characterized by their deep integration and familiarity with them; while digital hybrids represent a transitional group, consisting of individuals who have adapted to the digital world later in life, either through necessity or choice. Understanding the dynamics between digital natives, and digital hybrids, as digital media users, in the realm of VR games is crucial for game developers, researchers and the gaming industry. This study aims to serve as a foundation for further exploration and analysis of the evolving relationship between these media user groups and virtual reality (VR) games, shedding light on the implications for gamer gratifications and media use in the digital era.

Keywords: Digital media users, Digital natives, Dijital hybrids, VR games, Gratifications

Introduction

There are various ways to classify digital media users including active or passive (Hall, 1973; Blumler & Katz, 1974; McQuire, 1974; Blumler, 1979; Swanson 1979; McQuail, 1983; Levy & Windahl, 1984, 1985; Fiske, 1987; Rubin & Perse, 1987; Biocca, 1988; Ruggerio, 2000) prosumers (Toffler, 1980; Atheque, 2013) or players/gamers (Bartle, 1996) based on their media behavior, engagement, or preferences. Prensky (2001), on the other hand, classifies media users based on their familiarity and comfort with technology. Prensky (2001), defines young people whose mother tongue is the digital language of computers, digital games and the Internet as digital natives, and people who were not born in the digital world but have adopted many or most aspects of new technology at a later point in their lives as digital immigrants.

While Prensky included only the concepts of digital native and digital immigrant in his study, Yıldız (2012) suggests the terms digital hybrid for those born between 1970-1999, digital immigrant for those born before 1970, and digital native for those born in 2000 and later. Digital hybrids provide a transition between digital natives and digital immigrants and have the characteristics of both groups. Digital hybrids both try to take advantage of all the possibilities of technology like digital natives and still find printed materials very close and friendly, on the other hand, they are not resistant to technology like digital immigrants.

Virtual reality games are 3D game environments that combine digital games with virtual reality technology, activating multiple senses of the gamers such as hearing, seeing and touching through special virtual reality equipment and providing a real experience (Bohil et al., 2009; Jerald, 2015; Dani, 2019). When the theory of Uses and Gratifications, which explains how individuals use the media to meet their needs and desires, is applied to virtual reality games, it reveals that gamers play VR games to meet certain needs and desires and obtain some gratifications (Katz et al., 1973; Palmgreen et al., 1980; Rubin, 1983; McQuail, 1984; Rosengren et

al.; 1985; LaRose et al., 2001). Accordingly, a gamer may play virtual reality games to satisfy their needs for competition, challenge, social interaction, diversion, fantasy and arousal (Sherry et al., 2006). Gamers are expected to play digital games to be the best player in the game (competition); to win the game or to move on to the next level (challenge); to socialize with friends (social interaction); to pass time or to relieve boredom (diversion); to do things they cannot do in real life, such as flying (fantasy); and to feel the excitement (arousal) (Sherry & Lucas, 2004).

Research Questions

The research questions determined by the researchers are as follows:

1. Is there a significant difference between age groups in terms of the gratifications obtained?
2. Is there a significant difference between age groups in terms of the frequency of playing VR games?
3. Is there a significant difference between age groups in terms of the duration of playing VR games?
4. Is there a significant difference between age groups in terms of the gamer level?
5. Is there a significant difference between age groups in terms of the gaming place?

Method

In this study, quantitative research method was adopted and a questionnaire was used as a data collection tool.

Sampling and Sampling Method

Data were collected from 399 participants (aging between 18-53 and living in Istanbul province) who play VR games and snowball sampling method was chosen as the sampling method. Yazıcıoğlu & Erdoğan (2004) state that 384 participants will be sufficient for the sample for a finite number of universes. Accordingly, 399 participants have the ability to represent the universe. Based on Yıldız (2012) study, participants aged 18-23 (those born in 2000 and later) were classified as digital natives and participants aged 24-53 (those born between 1970-1999) as digital hybrids.

Scale

Since there is no scale developed on VR games gratifications, six gratification dimensions were determined with reference to the scale named “Video Game Uses and Gratifications Instrument” developed in the study named “Video Game Uses and Gratifications as Predictors of Use and Game Preference” (Sherry et al., 2006).

Data Collection Method

The questionnaire, which was determined as the data collection method, consists of a total of 30 questions and three sections. In the first part, there are four questions to determine the demographic characteristics of VR gamers. In the second part, there are 22 questions to determine the gratification factors according to the 5-point Likert scale. In this scale, the ranges of Totally Agree (5), Agree (4), Undecided (3), Disagree (2) and Totally Disagree (1) were given as response options. The third part consists of four questions about the game-playing habits of the gamers.

Limitations

One of the limitations of the research is that the sample of the research was applied only to VR gamers residing in Istanbul. As the questionnaire was filled through the online form, it was not possible to obtain information about the environment and how the participants filled the questionnaire. Due to the fact that VR technology is new and quite costly and many people cannot afford it in Turkey, it was difficult to reach the sample and the sample was limited to 399 participants.

Results

Cronbach's alpha value for 22 statements in the scale was determined as 0,946. In social sciences, widely accepted reliability level is 70% (Padem et al., 2012; Mallery, 2018), therefore, this value indicates that the study can be considered reliable.

In the first stage of the analysis, Varimax Rotation Components Analysis was performed. The Kaiser-Meyer-Olkin (KMO) sample size is .896% for the VR Games Gratifications Scale. Barlett Test of Sphericity was determined as 0.000 ($p<0.05$). Considering the reference values of the social sciences, these values show that the scale used in the study is suitable for factor analysis in the context of the data obtained. The total variance explained for the 6 gratifications obtained as a result of the explanatory factor analysis performed on the scale was determined as 64,934%. Dimensions in the scale are: Competition, Challenge, Arousal, Social Interaction, Fantasy, and Diversion. The variances explained according to the resulting dimensions are 13.683%, 11.267%, 10.838%, 10.276%, 10.139%, and 8.732%, respectively.

During the analysis, 3 statements (I enjoy doing new and creative things in the game, I play games when I have other things to do and playing VR games gives me excitement.) have been disabled as they do not comply with statistical rules. The factor loads of the expressions that make up the dimensions take values ranging from ,838 to ,426. The dimension with the highest standard deviation among the dimensions is Social Interaction (,89699); the dimension with the highest arithmetic mean is Difficulty (4,2707); the dimension with the highest Cr Alpha value is Arousal (,806); the highest variance explained is Competition (13,683). It is accepted that the variance values explained above 50% in social sciences are explanatory at a sufficient level (Streiner, 1994; Yaslıoglu, 2017).

Table 1. Findings of the Age Groups of the Participants

Variables		N	%
Age	18-23	206	51,6
	24-53	193	48,4
Total		399	100

When the age groups of the participants are evaluated (Table1), the participants between the ages of 18-23 (51.6%) and the participants between the ages of 24-53 (48.4%).

Research Question 1: Is there a significant difference between age groups in terms of the gratifications obtained?

Table 2. Difference in the gratifications obtained by age groups

Gratifications Obtained	Age Groups	n	$\bar{X}$	t	*p*
Competition	18-23	206	3,8447	1,807	,071
	24-53	193	3,6839		
Challenge	18-23	206	4,3058	1,097	,274
	24-53	193	4,2332		
Arousal	18-23	206	4,3204	3,833	,000*
	24-53	193	3,9845		
Social Interaction	18-23	206	3,5922	-,040	,968
	24-53	193	3,5959		
Fantasy	18-23	206	3,8835	,802	,423
	24-53	193	3,8187		
Diversion	18-23	206	4,1553	-,001	,999
	24-53	193	4,1554		

**It is significant at the p<0.05 level.*

Table 2 shows the evaluation of participants' perception of gratifications obtained from VR games in the dimensions of "Competition, Challenge, Arousal, Social Interaction, Fantasy and Diversion" by age groups. Accordingly, gratifications obtained from VR games differs according to the age group, as it provides ($p<0.05$) for the arousal dimension. According to the arithmetic means, there is a difference in arousal dimension due to the fact that the participants in the 18-23 age group ($\bar{X}$= 4.3204) reported more positive opinions than the

participants in the 24-53 age group (¯X=3.9845). That is, digital natives obtained more gratification from digital hybrids in terms of arousal dimension.

Research Question 2: Is there a significant difference between age groups in terms of the frequency of playing VR games?

Considering the distribution of VR gaming frequency by age groups in Table 3, there are 19 participants aged 18-23 who play VR games for a few days a year, and 13 people aged 24-53 who play VR games for a few days a year. There are 43 participants between the ages of 18-23 and 27 participants between the ages of 24-53 who play VR games a few days a month. There are 24 participants between the ages of 18-23 and 14 participants between the ages of 24-53, who stated that they play VR games 1 day a month. There are 39 people between the ages of 24-53 and 30 people between the ages of 18-23, who stated that they play VR games 1 day a week. Between both age groups (18-23, 24-53) there are 19 participants who stated that they play VR games every day. Since the significance level for the Chi-Square value is greater than 0.05 (0.116), there is no significant difference between digital natives and digital hybrids in terms of VR gaming frequency.

Table 3. Difference in Frequency of Playing by Age Groups

Frequency of playing		Age Groups	
		18-23	24-53
A few days a year	N	19	13
	%	59.4	40.6
A few days a month	N	43	27
	%	61.4	38.6
Once in a month	N	24	14
	%	63.2	36.8
Once in a week	N	30	39
	%	43.5	56.5
A few days a week	N	71	81
	%	46.7	53.3
Every day	N	19	19
	%	50.0	50.0
Total	N	206	193
	%	51.6	48.4

Pearson Chi-Square: .116, it is significant at the p<0.05 level.

Reseacrh Question 3: Is there a significant difference between age groups in terms of the duration of playing VR games?

In the evaluation of VR gaming time according to age group (Table 4), the rate of participants who are in the 24-53 age range and play VR games for 1-4 hours daily is 50.5%, while the rate of participants aged 18-23 who play VR games for 1-4 hours per day is 49%. While the rate of participants in the 18-23 age group who play VR games for more than 4 hours is 60.8, the rate of the participants in the 24-53 age group is 39.2. Accordingly, digital natives have longer VR gaming time. Since the significance level of the Chi-Square value is greater than 0.05 (0.080), there is no significant difference between the age groups (18-23, 24-53) according to the VR game playing time.

Table 4. Difference in duration of playing by age group

Duration of playing		Age groups	
		18-23	24-53
1-4 hours	N	161	164
	%	49.5	50.5
More than 4 hours	N	45	29
	%	60.8	39.2
Total	N	206	193
	%	51.6	48.4

Pearson Chi-Square: .080, it is significant at the p<0.05 level.

Research Question 4: Is there a significant difference between age groups in terms of the gamer level?

Table 5 indicates that among the participants aged 18-23, there are 65 beginner participants, and among the participants aged 24-53, there are 57 beginners. At the intermediate level, there are 108 participants between the ages of 24-53 and 100 participants between the ages of 18-23. There are 206 individuals between the ages of 18-23 and 193 people between the ages of 24-53 who are advanced VR gamers. Since the significance level of the chi-square value is greater than 0.05 (0.239), there is no significant difference in the level of gamers between digital natives and digital hybrids.

Table 5. Difference in gamer level by age group

Gamer Level		Age Groups	
		18-23	24-53
Beginner	N	65	57
	%	53.3	46.7
Intermediate	N	100	108
	%	48.1	51.9
Advanced	N	41	28
	%	59.4	40.6
Total	N	206	193
	%	51.6	48.4

Pearson Chi-Square: .239, it is significant at the p<0.05 level.

Research Question 5: Is there a significant difference between age groups in terms of the gaming place?

Table 6 shows that 53.1% of the participants between the ages of 24-53 and 46.9% of the participants between the ages of 18-23 play at home. While the percentage of participants between the ages of 18-23 who play games at VR café, workplace or school is 67.8%, the percentage of participants between the ages of 24-53 is 32.2%. Based on the findings, more than half of digital hybrids prefer to play games at home, whereas digital natives mostly prefer to play VR games outside the home. Since the significance level of the chi-square value is less than 0.05 (0.000), the gaming place differs between the age groups.

Table 6. Difference in gaming place by age group

Gaming place		Age groups	
		18-23	24-53
At home	N	145	164
	%	46.9	53.1
VR café/School/Work	N	61	29
	%	67.8	32.2
Total	N	206	193
	%	51.6	48.4

Pearson Chi-Square: .000, it is significant at the p<0.05 level.

Discussion and Suggestions

The findings of this study revealed that among the different age groups, only arousal (e.g. Playing VR games raises my level of adrenaline.) showed a significant difference in terms of the gratifications obtained. This implies that individuals across various age groups, regardless of whether they belong to the digital hybrid or digital native classifications, tend to experience similar levels of gratification and enjoyment when engaging with VR games. As the advancements in technology and the widespread availability of digital media have blurred the lines between digital natives and digital hybrids, they may have developed a certain level of familiarity and proficiency with digital devices and virtual environments. Consequently, the differences in gaming habits and gratifications obtained from VR games between digital natives and digital hybrids may be diminishing. One other reason for the lack of significant differences in gaming habits and gratifications could be attributed to the nature of VR gaming itself. Virtual reality offers a highly immersive and interactive experience that transcends age boundaries. The sense of presence and engagement within the virtual world may create a level playing field, where individuals of all age groups can equally enjoy and derive gratification from the unique aspects of VR games. The findings also have important implications for the design and development of VR games and experiences. Game developers should consider the universal appeal of VR technology and focus

on creating immersive experiences that cater to a wide range of age groups. By designing games that capture and maintain users' attention, regardless of their digital upbringing, developers can ensure a broader market reach and maximize the gratification obtained by players.

Finally, it is worth noting that this study has certain limitations that should be acknowledged. Firstly, the sample size and demographic characteristics of the participants may have influenced the generalizability of the findings. Future research should consider larger and more diverse samples to enhance the external validity of the results. Additionally, the study focused solely on age groups and did not consider other potentially influential factors, such as gaming experience, personality traits, or technological proficiency. Future studies could explore these variables to gain a more comprehensive understanding of the factors contributing to the gratifications obtained from VR gaming.

Scientific Ethics Declaration

The authors declare that the scientific ethical and legal responsibility of this article published in EPESS journal belongs to the authors.

Acknowledgements or Notes

* This article derived from the PhD dissertation titled “A Research on Virtual Reality Games as a Digital Media Tool in the Context of Uses and Gratifications Theory” was presented as an oral presentation at the International Conference on Research in Education and Social Sciences (www.icress.net) held in Budapest/Hungary on July 06-09, 2023.

References

Athique, A. (2013). *Digital media and society: an introduction*. Cambridge: Polity Press.

Bartle, R. (1996). Hearts, clubs, diamonds, spades: Players who suit MUDs. *Journal of Online Environments, 1(1),* 1-27.

Biocca, F. A. (1988). Opposing conceptions of the audience: The active and passive hemispheres of mass communication theory. In J. A. Anderson (Ed.), *Communication yearbook 11* (pp. 51–80). Sage Publications.

Blumler, J. G., & Katz, E. (Eds.). (1974). *The uses of mass communications: Current perspectives on gratifications research*. Beverly Hills, CA: Sage Publications.

Blumler, J. G. (1979). The role of theory in uses and gratifications studies. *Communication Research, 6(1),* 9–36.

Bohil, C., Owen, C. B., Jeong, E. J., Alicea, B., & Biocca, F. (2009). Virtual reality and presence. In W. F. Eadie (Ed.), *21st century communication: a reference handbook* (pp. 534-542). California: SAGE Publications.

Dani, N. J. (2019). Impact of virtual reality on gaming. *International Research Journal of Engineering and Technology, 6(12),* 2033-2036.

Fiske, J. (1987). *Television culture: Popular pleasures and politics*. Methuen.

Hall, S. (1973). Encoding and decoding in the television discourse. *Centre for Contemporary Cultural Studies*, Univesity of Birmingham.

Jerald, J. (2015). *The VR book: Human-centered design for virtual reality*. San Francisco: Morgan & Claypool Publishers.

Katz, E., Blumler, J. G., & Gurevitch, M. (1973). Uses and gratifications research. *The Public Opinion Quarterly, 37(4),* 509-523.

LaRose, R., Mastro, D., & Eastin, M. S. (2001). Understanding internet usage: a social-cognitive approach to uses and gratifications. *Social Science Computer Review, 19(4),* 395-413.

Levy, M., & Windahl, S. (1984). Audience activity and gratifications: a conceptual clarification and exploration. *Communication Research, 11,* 51-78.

Levy, M., & Windahl, S. (1985). The concept of audience activity. In K. E. Rosengren, L. A. Wenner, & P. Palmgreen (Eds.), *Media gratifications research: Current perspectives* (pp.109-122). Newbury Park, CA: Sage.

Lucas, K., & Sherry, J. L. (2004). Sex differences in video game play a communication-based explanation. *Communication Research, 31,* 499-52.

Mallery, P. (2018). *IBM SPSS statistics 25 step by step: a simple guide and reference*. London: Routledge.

McGuire, W. J. (1974). Psychological motives and communication gratification. In J. G. Blumler & E. Katz (Eds.), *The uses of mass communications: current perspectives on ratifigcations research*. Beverly Hills, California and London: Sage.

McQuail, D. (1983). *McQuail's mass communication theory* (1st Ed.). London: SAGE.

McQuail, D. (1984). *Communication models for the study of mass communications*. In D. McQuail (Ed.), McQuail's reader in mass communication theory (pp. 27-39). London: Sage Publications.

Padem, H., Göksu, A., & Konaklı, Z. (2012). Arastırma metotları ve veri toplama. In Padem, H. (Ed.), *Arastırma yontemleri SPSS uygulamalı* (pp. 61-89). Sarajevo: International Burch University.

Palmgreen, P., Wenner, L. A., & Rayburn, J. D. (1980). Relations between gratifications sought and obtained: a study of television news. *Communication Research, 7(2),* 161-190.

Prensky, M. (2001). Digital natives, digital immigrants, part 1. *On The Horizon*, *9*, 3-6.

Rosengren, K. E., Wenner, L. A., & Palmgreen, P. (1985). *Media gratifications research: Current perspectives*. Beverly Hills, CA: Sage Publications.

Rubin, A. M. (1983). Television uses and gratifications: The interactions of viewing patterns and motivations. *Journal of Broadcasting & Electronic Media, 27(1),* 37-51.

Rubin, A. M., & Perse, E. M. (1987). Audience activity and television news gratifications. *Communication Research, 14(1),* 58–84.

Ruggiero, T. E. (2000). Uses and gratifications theory in the 21st century. *Mass Communication & Society, 3(1),* 3-37.

Sherry, J. L., Greenberg, B. S., Lucas, K., & Lachlan, K. (2006). Video game uses and gratifications as predictors of use and game preference. *International Journal of Sports Marketing and Sponsorship, 8,* 213-224.

Streiner, D. L. (1994). Figuring out factors: The use and misuse of factor analysis. *The Canadian Journal of Psychiatry, 39(3),* 135–140.

Swanson, D. L. (1979). Political communication research and the uses and gratifications model a critique. *Communication Research, 6(1),* 37–53.

Toffler, A. (1980). *The third wave*. Bantam Books.

Yaslıoglu, M. M. (2017). Sosyal bilimlerde faktor analizi ve gecerlilik: Kesfedici ve dogrulayıcı faktor analizlerinin kullanılması. *Istanbul Universitesi Isletme Fakültesi Dergisi*, *46*, 74-85.

Yazıcıoğlu, Y., & Erdogan, S. (2004). *SPSS uygulamalı bilimsel arastırma yontemleri*. Ankara: Detay Yayıncılık.

Yıldız, K. A. (2012). Are digital natives really natives or digital hybrids?. *International Journal of Social Science, 5(7),* 819-833.

Author Information

Hande Tercan-Bingol
Yeditepe University
Istanbul, Turkey
Contact e-mail: *hande.bingol@yeditepe.edu.tr*

Emel Karayel-Bilbil
Marmara University
Istanbul, Turkey

To cite this article:

Bingol-Tercan, H., & Bilbil-Karayel, E. (2023). A comparative study on VR games in terms of digital media users. *The Eurasia Proceedings of Educational & Social Sciences (EPESS)*, *31*, 92-98.