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Gaming for a Purpose: Exploring the Role of Uses and Gratifications in VR Games

Sanal Gerçeklik Oyunlarında Kullanımlar ve Doyumlar Teorisinin Rolü Üzerine Bir Araştırma

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ABSTRACT

Digital media technologies have revolutionized the gaming industry in numerous ways. Among the most notable advancements is the rapid expansion of virtual reality. Virtual reality is 3D virtual environments provided by computers that feel real using various hardware such as head-mounted displays (HMD), gloves, sound systems, bodysuits, and platforms. When applied to digital playgrounds, VR technology gives gamers an immersive experience by activating multiple senses through special VR equipment, such as hearing, seeing, and touching. This study aims to reveal the gratification factors obtained from VR games from the perspective of U&G theory. The study also focuses on six dimensions of gaming features, including the most played game genres, the frequency and duration of gaming, gamer level, playing environment, and the most preferred VR gaming devices.

Keywords: VR Games, Uses and Gratifications Theory, Digital Media, Virtual Reality

ÖZ

Dijital medya teknolojileri, oyun endüstrisini pek çok açıdan değiştirmiştir. Oyun endüstrisindeki en önemli gelişmelerden biri de sanal gerçekliğin gelişimidir. Sanal gerçeklik, başa takılan ekranlar (HMD), eldivenler, ses sistemleri, vücut giysileri ve platformlar gibi çeşitli donanımlar kullanılarak gerçek hissi veren bilgisayarlar tarafından sağlanan üç boyutlu sanal ortamlardır. Sanal gerçeklik teknolojisi, özel sanal gerçeklik ekipmanı aracılığıyla dijital oyun alanına uygulandığında, işitme, görme ve dokunma gibi çoklu duyuları etkinleştirerek oyunculara sürükleyici bir deneyim sunmaktadır. Bu çalışma, sanal gerçeklik oyunlarından elde edilen doyum faktörlerini Kullanımlar ve Doyumlar teorisi bakış açısıyla ortaya koymayı amaçlamaktadır. Çalışma ayrıca en çok oynanan oyun türleri, oyun oynama sıklığı ve süresi, oyuncu seviyesi, oyun ortamı ve en çok tercih edilen sanal gerçeklik oyun cihazları dahil olmak üzere oyun özelliklerinin altı boyutuna odaklanmaktadır.

Anahtar Kelimeler: Sanal Gerçeklik Oyunları, Kullanımlar ve Doyumlar Teorisi, Dijital Medya, Sanal Gerçeklik

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Introduction

The primary purpose of this research is to reveal what kind of gratifications VR gamers obtain and examine them within the framework of The Uses and Gratifications Theory. This research also aims to indicate the demographic characteristics of VR gamers, their frequency of playing, their daily playing times, their levels, the place they play, the most played game genres, and the most used VR game devices. The literature review shows that the most asked and researched question to date is what kind of gratifications people get by using the media. Although many studies have been conducted on the audience's use of traditional media and social media and the gratification they derive from them, the fact that no research has been conducted on VR games reveals the necessity of a study on this subject. Therefore, considering VR games, which have entered our lives in recent years, as a type of digital game is one of the most critical parts of this study. Since the research examining the uses and gratifications of virtual reality games is new, in the absence of studies that directly examine virtual reality games, some of the literature on digital games has been used for the proposed conceptual framework.

Theoretical Framework

The foundational concepts of the Uses and Gratifications Theory can be traced back to the early years of media studies during the 1940s. The theory elucidates how individuals employ media as means to meet their needs and desires, highlighting their active role in seeking out and utilizing media to fulfill distinct needs. It represents a departure from the notion of passive media consumption, marking a shift towards understanding the role of media in people's lives and its impact on them. U&G research finds its origins in Herta Herzog's work in 1944, marking the first use of the term "gratification" in the context of media use (Tomko, 2007, p. 4). Her study was conducted as part of Paul F. Lazarsfeld's extensive mass media research program, which aimed to understand the gratifications derived by radio listeners from daytime serials and quiz shows. Herzog's curiosity about radio listeners led her to explore the motivations and gratifications of fans of a popular game show (1940) and soap opera listeners (1944). In her study titled "Motivation and Gratification of Daily Series Listeners, 'she highlighted that' at least 20 million women regularly date these serials" (1944, p. 3, as cited in Tomko, 2007, p. 5). Concurrently, Paul F. Lazarsfeld, a prominent mass media researcher, conducted a comprehensive study in 1937, delving into the intricate impact of radio on American society. His research contributed significantly to the foundational aspects of the theory by examining the radio audience, their listening habits, motivations, and the potential effects of their listening patterns (Garfinkel, 1987, pp. 17-18).

Although communication scholars disagree on the exact origins of the approach, in the 1950s and 1960s, researchers conducted the next phase of U&G research and identified a wide range of social and psychological variables that

were thought to be the antecedents of various patterns of gratifications (Wimmer & Dominick, 1994 as cited in Ruggiero, 2000, p. 5). With the rise of the television era in the 1960s, a new arena was created for the U&G theory as a second phase, and researchers such as Katz and Foulkes (1962), Mendelsohn (1964), Greenberg and Dominick (1969), Blumler & McQuail (1969) contributed significantly to the theory (Davis, 2006 as cited in Özeltürkay & Yarımoğlu, 2019, p. 144). During the 1960s and 1970s, the basic assumptions of the theory were shaped. Accordingly, the audience is active because it can make the choice of media and content generally rationally and towards certain specific goals and gratifications. Audiences are aware of media-related needs, and these needs are shaped by both individual and societal characteristics. Factors related to audience formation, such as motives, perceived or obtained gratification, media choices, can all be measured in principle (McQuail, 2010, p. 423).

U&G studies conducted until the 1970s focused on the gratifications sought, excluding the gratifications obtained (Perry, 2002, p. 76). Obtained gratifications refer to the gratifications that audience members derive from their specific media consumption. On the other hand, the gratifications sought (often referred to as needs, motives, or motivation) represent the gratifications that audiences foresee receiving from the media. A particular gratification sought by an individual influences the nature of the gratifications perceived to be obtained during the actual engagement with the media (Palmgreen et al. 1980, p. 164). Blumler & Katz's (1974) publication, "The Uses of Mass Communication," significantly contributed to the theory's evolution, elucidating the rationale for investigating media uses and the gratifications it yields. Media use and gratification are related to the social and psychological origins of needs, revealing media expectations, and leading to various patterns of media exposure, leading to other, perhaps mostly unexpected, consequences (McQuail & Windahl, 2013, p. 134). Rosengen (1974) also developed a model of the U&G theory indicating that basic needs interact with individual characteristics and society to produce perceived problems and perceived solutions which later transform into motives to use media or other behavior (Papacharissi, 2008, p. 138). In other words, the needs of the individual are the beginning point, but before they encourage action, they must first be recognized as problems with potential solutions (McQuail & Windahl, 2013, p. 135).

The U&G theory is subject to some criticism on theoretical coherence, utility, and intuitive knowledge. Denis McQuail (1984) argued that the approach suffers from a lack of theoretical consistency and that its terminology needs to be defined more (West & Turner, 2018, pp. 400-401), while LaRose (2004, 2010) argued against the confusion between gratifications and habits in U&G research (LaRose, 2010, pp. 588-592). Other criticisms (e.g., Conway & Rubin, 1991; Finn, 1997; Ruggiero, 2000) are that the focus of the theory is overly individualistic, that people's motivations for media use lack consistent typologies, and that its basic concepts need more clarification (Nabi & Oliver, 2010, p. 223). However, Rubin (1983) found that gratification researchers began to produce valid responses to criticisms of the theory. He con-

cluded that his colleagues diligently engaged in systematic efforts to perform adjusted replications or extensions of research studies, improve research methodologies, compare findings with other studies, and acquire a deeper understanding of mass media as an integrated communication and social phenomenon (Rubin, 1983, p. 38).

In the 1990s, with the introduction of the Internet into homes, gratification studies began to change direction. And in the 2000s, computer-mediated communication has reinvigorated the importance of U&G research, and as communication technologies have rapidly developed, the potential topics for U&G research also have expanded (Ruggiero, 2000). In the 2000s, television, which was the most popular media type of U&G research until then, left its place to the Internet and social media research. Kaye and Johnson (2002) stated that interactive functions of the Internet, such as e-mail, chat rooms, list servers and social media, are not available on television (Gangadharbatla, 2011, p. 265). Wu, Jen-Her et al. (2010) concluded in their research that the three types of gratifications obtained from online games are achievement, entertainment, and social interaction.

In the 2020s, the Uses and Gratifications theory has gained increased relevance, particularly with the explosion of digital technologies, such as virtual reality (VR) games. Although a lot of research has been done on digital games, virtual reality games attract attention as a form of media that needs to be analyzed through the lens of the U&G theory to understand why people choose to interact with them, as digital media is relatively the newest technology.

Virtual Reality as Digital Media

Contemporary societies of today are characterized by the ubiquitous presence of digital media. The increasing prevalence of media in all aspects of life suggests a phenomenon referred to as "media life" by Deuze (2007, p. 242). The transformation of the present-day world into what has been described as a "mediapolis" by Roger Silverstone (2007), Alex de Jong, Marc Schuilenburg (2006), and Sam Inkinen (1998) underscores the profound impact and presence of media in all facets of society (Deuze, 2011, p. 137). The evolution of computers is part of the history of an information society that began centuries ago with the idea of collecting, storing, and processing social and economic data. However, the fundamental components of digital media, such as electronic computers and networks, have been developed more recently. Smartphones, tablets, and similar mobile technologies have further integrated digital media into our daily lives (Delfanti & Arvidsson, 2019, pp. 4-5). The foundational digital technology, the internet, has become an inseparable part of the digitized world today, alongside elements such as social media, cloud technology, artificial intelligence, mobile technologies, and augmented and virtual reality technologies.

Definitions

Various definitions of the concept of virtual reality (VR) can be found in the literature. In some sources, virtual reality has been described as a type of media, like television or a phone. This new media is typically defined as a specific collection of technological hardware, including computers, head-mounted displays, headphones, and motion-sensing gloves (Steuer, 1995, p. 33). According to Burdea and Coiffet (2003, p. 3), virtual reality is a high-quality user-computer interface that involves real-time simulation and interaction through multiple sensory channels. These sensory modalities include visual, auditory, tactile, olfactory, and gustatory elements. Stone (1991, p. 283) defines virtual reality as a multimedia environment that facilitates communication between computers and humans, appealing to human senses. Cruz-Neira (1993) characterizes virtual reality as the combination of immersive, interactive, multi-sensory, viewer-centered, three-dimensional computer-generated environments and the technologies required to create these environments. Alternatively, virtual reality can be defined as a clone of physical reality that allows real-time navigation and viewing in a three-dimensional world (Von Schweber & Von Schweber, 1995, p. 169). In general, virtual reality can be described as a technology that allows the replacement of the real world with a synthetic world, making the user feel as if they are in another dimension (Cruz-Neira et al., 2018, p. 1).

Virtual Reality and Simulations

The idea of information technologies allowing the mind to operate independently of the body gained popularity with the adoption of virtual reality technologies, which were gradually developed and applied in areas like sensory simulators that combine visual and auditory elements. In popular culture, virtual reality has been defined as a highly realistic simulation of an entirely unreal world. This concept has been prominently depicted, particularly from the 1980s through the late 1990s, in popular works such as Star Trek, where fictional spaces like virtual decks were frequently portrayed (Athique, 2013, p. 72). From Baudrillard's perspective, virtuality and simulation are two concepts that blur the boundaries between reality and the unreal in today's media and technology environment. Virtual reality is, in fact, an example of simulation. While virtual reality initially aimed to mimic the real world, it has now become an independent entity with its own reality. People, within virtual reality, do not experience the real world but instead adhere to the rules of the virtual world and engage with its reality.

As an extension of technological determinism, virtual determinism becomes the new world for humanity, continuously renewing and evolving alongside technological progress. Virtual reality, at times through wearable technology and sometimes through games, creates a world entirely equipped with digital technology. This world is, as expressed by Baudrillard, not a technology-based world but

the very essence of a purely virtual world (Yengin & Bayrak, 2017, pp. 114-116). Disneyland, for example, serves as the center for an illusionary and phantasmal game, where things like pirates and the world of the future are fabricated. This realm of fantasy resembles a miniature sociocultural microcosm of real America, where the values possessed by America are reproduced in miniature form through cartoons (Baudrillard, 2011, pp. 12-28).

Virtual Reality Technology and its Development

Virtual reality is a tool and techniques set that offers users a sensory and psychological experience as an alternative to reality, encompassing more than just a single technology. This technology has the potential to transport users to different worlds, providing them with alternative experiences. As virtual reality simulates and effectively mimics real-world experiences by providing various sensory inputs, the user's perceptual and cognitive experience becomes more realistic. Therefore, one of the fundamental objectives of virtual reality design is to make the user perceive a computer-generated simulation as indistinguishable from a real-world experience (Biocca, 1996; Hawkins 1995, as cited Bohil et al., 2009, p. 534).

The origins of virtual reality technology can be traced back to the Stereoscope, a three-dimensional (3D) device independently invented by Charles Wheatstone and David Brewster in the 1830s and 1840s. This device was used as a tool to facilitate visual processing and was later commercialized by William Gruber in the 1930s (Paro et al., 2022, p. 38). The Sensorama, a sensory simulator developed by Morton Heilig between 1960 and 1962, enriched pre-recorded films with color and stereo features, binaural sound, scents, wind, and vibration experiences. While considered one of the early approaches to the concept of virtual reality, Sensorama had limited interactive capabilities (Mazuryk & Gervautz, 1999, p. 2).

In 1965, Ivan Sutherland introduced the "Ultimate Display," the first Head-Mounted Display (HMD) that could be connected to a personal computer. This system laid the foundation for modern virtual reality applications by generating processed binocular images suitable for tracking the position and orientation of the moving head, enabling immersive virtual reality experiences (Basu, 2019, pp. 2-3). Sutherland (1965) described the head-mounted display system, also known as "The Sword of Damocles," as "a mirror looking into a mathematical wonderland, giving the opportunity to become familiar with concepts that cannot be realized in the physical world, connected to a digital computer." In the 1980s, the U.S. Air Force and NASA developed various simulators and head-mounted displays for military and space technologies (Mazuryk & Gervautz, 1999, p. 3). In 1985, Jaron Lanier founded VPL Systems, aiming to develop and commercialize virtual reality systems using visual, auditory, and tactile interfaces. However, the sensory reality experience made possible by these technologies was not as effective and widespread as initially envisioned. Consequently, this particular form of virtual reality was not as successful as the core concept (Athique, 2013, p. 72). Lanier is also the person who

coined the term "virtual reality."

The next venture for virtual reality technology came from Sega in 1991, where they announced that they were working on a VR headset as an add-on for the Sega Genesis console. The headset, equipped with dual LCD screens, stereo headphones, and inertial sensors to track and respond to head movements, remained at the prototype stage and did not progress further (Bown et al., 2017, p. 249). In 1992, the Computer Assisted Virtual Environment (CAVE), a virtual reality and scientific visualization system, was introduced. It was designed and developed by Tom DeFanti, Dan Sandin, and their team, offering various applications for scientific and artistic purposes (Cruz-Neira et al. cited Sherman & Craig, 2019, p. 43). Another significant development in the history of virtual reality occurred in 1995 when Nintendo released the "Virtual Boy" device. However, Virtual Boy did not succeed due to issues such as eye strain and headaches caused by extended use (Bown et al., 2017, p. 250).

In the 2000s, virtual reality technology began to advance rapidly, and it made significant progress with the introduction of the Oculus Rift by Luckey Palmer in 2012. In 2014, Facebook (now known as Meta) acquired Oculus for 2 billion dollars, marking a significant step in the field of virtual reality. Following the invention of the Oculus Rift, major technology companies, including Google, Samsung, HTC, Sony, and, in 2023, Apple, released products that offer virtual reality experiences. Virtual reality technology continued to make significant advancements throughout this period, providing users with increasingly realistic and immersive experiences.

Virtual Reality (VR) Games

Expanding games into virtual reality environments offers a range of new possibilities for the gaming experience. Virtual reality, with features like a wide field of view, stereoscopic images, and natural user interfaces that require physical interactions to create a player's character, provides the opportunity to immerse players entirely into the game. While traditional computer games typically use a third-person perspective (where the participant controls a character on the screen with a controller), virtual reality allows players to step fully into the game world, experiencing it from a first-person perspective (Craig et al., 2009, p. 300).

Recent advancements in motion sensors, graphics technologies, multi-display systems, and interactive developments have significantly expanded the possibilities of virtual reality (VR) gaming. These developments provide highly interactive and immersive experiences in artificial worlds, surpassing traditional forms of entertainment. VR games, which range from active adventures to relaxing immersions, go beyond current technologies by perceiving players in a first-person perspective and taking them to the core of the story (Cruz-Neira et al., 2018, p. 2). Complex graphics technologies used in today's computer games are the most prevalent application of the fundamental concept of virtual reality in the commercial sphere. As computer-generated graphics continue to enhance the level of realism,

sensory immersion devices have also evolved. Widescreen displays and high-definition imagery have become widespread, while surround sound systems have begun offering highly realistic three-dimensional spatialized sound experiences. The realism created by these devices significantly heightens the sense of presence while playing games (Bohil et al., 2009, p. 539).

Virtual reality games primarily focus on the senses of sight, hearing, and touch while needing further hardware development to affect the senses of smell and taste. Some companies produce masks compatible with existing virtual reality devices to provide scent experiences. Additionally, researchers at some universities are working on thermal taste technology, which has the potential to impact the sense of taste and can be applied to virtual reality games for various scenarios. Virtual reality players can interact with three-dimensional, 360-degree visuals through special headsets. Different sound effects enhance the user experience, and objects within the game are designed based on the user's interaction, position, and direction. Tactile feedback is also utilized in line with the game scenario, for example, vibrations felt in the hand can vary while firing in shooting games (Dani, 2019, pp. 2034-2035).

Utilizing computer gear, software, and other VR accessories, virtual reality technology creates virtual settings that completely immerse the user in the 3D world of the game. The VR gaming market is predicted to grow at a CAGR of 29% from its current market size of $12.13 billion in 2022 to $33.65 billion in 2026 (Kolmar, 2023; Report Linker, 2022). Survival game No Man's Sky (212613 players), Combat game War Thunder (113250 players), horror game Phasmophobia (112717 players), horror survival game Resident Evil Village (106631 players), simulation game Microsoft Flight Simulator (61829 players), anime game Vr Chat (46814 players) are the 5 most played VR games (Steam Chart, 2023).

Virtual Reality Gaming Devices

Virtual reality gaming devices are hardware and software combinations that enable players to experience interactive virtual worlds. Popular devices in this field include Oculus Rift, HTC Vive, PlayStation VR, and Samsung Gear VR. The Oculus VR company has played a significant role in virtual reality technology by developing Oculus Rift. Additionally, simpler devices like Google Cardboard can be used to transform smartphones into virtual reality experiences (Campbell, Martin, & Fabos, 2017, pp. 216-217). Virtual reality game parks allow users to freely navigate and interact within virtual worlds. Facilities such as The Void provide players with fully immersive experiences through tactile feedback and various physical effects. Furthermore, these establishments collaborate with major corporations to offer experiences based on popular themes, such as creating Disney-themed entertainment centers (Metz, 2015).

Virtual Communities and Game Culture

Agostini and Mechant (2019, p. 6) define the concept of virtual communities as a group of individuals or business partners with a common interest who come together and interact in a digital space using a shared language and specific rules. According to Rheingold (2000), a "virtual community" is a social group formed on the internet where people communicate, chat, get to know each other to some extent, form emotional connections, and share specific information. Virtual communities facilitate the exchange of information related to mutual areas of interest on digital platforms. This is supported by factors such as strong social relationships, shared history, community rituals, continuous communication, and a common platform (online meeting space) (Stanoevska-Slabeva, 2002, p. 71).

With the proliferation of the internet, some digital games, especially those derived from fantasy role-playing games, have redefined virtual reality in a different context. Those who enjoy these games have formed networks by interacting with each other through online games played by thousands of people simultaneously. Rheingold (2000) refers to online gaming groups as "virtual communities." Most virtual communities are created through online newsgroups and chat rooms. People who frequently visit these groups interact, get to know each other, and establish close relationships. Virtual communities that meet online began to emerge in the 1980s before the internet's widespread adoption. The first online multiplayer environments were text-based environments known as Multi-User Dungeons (MUDs). As computer graphics improved, MUDs evolved into Object-Oriented MUDs (MOOs) and Multi-User Simulated Environments (MUSEs), which began to incorporate graphics (Yount, 2005, pp. 75-76).

Gaming communities, where players interact online without coming together physically, reflect an important phenomenon that calls for a reconsideration of Marshall McLuhan's concept of the "Global Village." Through these communities, players can transcend physical boundaries and communicate with people playing games from all over the world. McLuhan describes such technology as supplanting the obsolescent form of the city, which would never again be more than a village, and identifies it as a global technology replacing a city's nature as a form that fades away like a scene in a movie (McLuhan, 1994, p. 379). Communication tools in the new electronic age, also known as Marconi's Galaxy, are entirely different from previous eras. McLuhan characterizes these new communication tools as reestablishing a harmonious balance of the senses, acting as simultaneous extensions of the entire nervous system. Visual culture, according to McLuhan, has led to the fragmentation of individuals, a condition he refers to as "cultural schizophrenia." Nevertheless, through electronic global communication, humanity is brought back together, allowing the senses to expand as a unified network indefinitely, uniting all people in a global village (Olos, 2004, p. 87). Online gaming communities concretely demonstrate McLuhan's idea that new media communication systems awaken new tribal forms. These communities shape subcultures based on criteria like the

game genre played, the setting, and skill levels through factors that contribute to the gaming culture.

Pierre Bourdieu's concepts of habitus and field help us understand the relationship between game and culture. Habitus defines individuals' capacity to recognize situations and internalize cultural practices. Player habitus refers to a person's intuitive understanding of how to react to video games. Player habitus is often acquired during childhood and is shaped by social norms. This enables players to naturally engage with computer games. (Kirkpatrick, 2015, pp. 18-24).

Studies on Games

Although not specific to VR games, researchers have done a lot of research on digital games. Many researchers including Bartle (1990), Griffiths et. al. (2004), Kerr (2006), Yee (2006) point to socialization as the main reason individuals play online games (Cicchirillo, 2011, p. 459). Bartle (1996, p. 6), one of the first researchers to examine motivations for online gaming, identified four personality types that define an individual's motivations for gaming: "Achievers, Explorers, Socializers, and Killers". Yee (2006) presented comprehensive and ambitious findings in the project called Daedalus, which he started in 1999 on motivations for playing online games. He developed a classification of online gaming motivations, first finding eight main factors, and then reducing this number to five factors: "Immersion, Escape, Manipulation, Relationship, and Success" (Yee, 2015, pp. 22-23).

Wu et al. (2010) stated "achievement, enjoyment and social interaction" as three gratification factors obtained from online games. Hou (2011) researched gratifications from social games and Sherry et al. (2006) researched the gratifications obtained from video games and found 6 gratification factors: "Arousal, Challenge, Competition, Diversion, Fantasy, and Social Interaction". Sun et.al. (2006), on the other hand, found five gratifications for online games: "Teamwork, Excitement, Self-expression, Relieving Pressure/Relaxing, and Novelty".

While there are existing studies comparing VR games and PC games (Eastin and Griffiths, 2006; Shelstad, Smith, & Chaparro, 2017; Yıldırım et al., 2018), as well as research on VR game genres (Foxman et al., 2020), there is currently no study available that specifically focuses on the gratifications derived from VR gaming. The absence of research addressing the gratifications individuals derive through playing virtual reality games has prompted a need to focus on the gratifications obtained from virtual reality games within the context of the U&G theory in this study.

Method

A quantitative research design was adopted in the study. The data collection technique chosen as the quantitative research method is the questionnaire. Before the survey questions were prepared, other studies conducted around the world in

the context of the "Uses and Gratifications Theory" were examined and a study in Video Game Uses and Gratifications Instrument (in Video Game Uses and Gratifications as Predictors of Use and Game Preference) (Sherry et al., 2006) Six factors were determined by taking gratifications factors as reference. Based on these six factors in the research, it is aimed to examine the gratifications that gamers get by playing VR games. The questionnaire, which was determined as the data collection method, consists of a total of 32 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 prepared 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 six questions about the game-playing habits of the gamers. Snowball sampling method was chosen as the sampling method and the questionnaire was applied to VR gamers residing in Istanbul.

Limitations

One of the limitations of the research is that the sample of the research is applied only to VR gamers residing in Istanbul, considering time constraints and financial opportunities. Again, due to the limited time and access to large audiences, the questionnaire will be filled through the online form, and although various measures have been taken for a healthy answer, the fact that it is not possible to obtain information about the environment and how the participants filled the questionnaire is another limitation of the research. Due to the fact that VR technology is new and quite costly, many people cannot prefer it, it was difficult to reach the sample and the sample was limited to 119 participants.

Validity and Reliability of the Research

The most fundamental issue that can be addressed for the realization of research is validity and reliability. The validity, which is considered at the very beginning of the research process, is a preliminary assessment necessary to continue and finalize the research. This study followed the process of analyzing and adapting the scales used in foreign languages, which is an important criterion for validity, into Turkish. The scale, which was originally in English (and adapted from Sherry et al., 2006), was translated separately by four English language experts, then these analyses were compared, and a template was drawn up. Finally, the scale was presented to the experts on the subject, and opinions were received about its compatibility with the scientific language of the relevant scientific field, and after these stages, the scale was given its final form.

Reliability is expressed as the degree to which a scale measures the subject to be measured coherently and consistently (Salkind, 2015). In this respect, reliability analysis is not about scale like validity, and it is about data. Therefore, it is located between the data collection process and the analysis process. The reliability

condition must be fulfilled in order to complete the analysis and report the research results. Cronbach's alpha coefficient is one of the most frequently used values for reliability analysis in empirical studies, and this coefficient is expected to be over 0,700 for social sciences (George & Mallery, 2019). In this study, Cronbach's alpha coefficient for 22 statements in the scale was determined as 0.879. The coefficient shows that the reliability condition is fulfilled in the study.

Findings

In the context of the findings of the study, first of all, descriptive information about the demographic characteristics of the participants and their game-playing features are included. In Table 1, the participants' gender, age, education level, marital status, frequency of playing VR games, daily game playing time, gamer level and game environments are given. According to the demographic and descriptive information of the participants, female (26.1%) participants are fewer in number than male (73.9%) participants. According to age distribution, it can be seen that the participant group aged 31 and over (63.9%) is more common than the participant group aged 30 and younger (36.1%). The idea that there are more young people playing VR, in general, is more common in society. It is thought that the snowball sampling method is determinative for this result. Participants with undergraduate education are more than half (67.2%) of all participants. According to the latest demographic finding, married (26.1%) participants are fewer in number than single (73.9%) participants.

VARIABLES	N	%
Gender		
Male	88	73.9
Woman	31	26.1
Age		
Age 30 and under	43	36.1
Age 31 and over	76	63.9
Educational Status		
High school	6	5.0
Bachelor’s	80	67.2
Master’s Degree	26	21.8
Doctorate	7	5.9
Marital status		
Married	41	34.5
Single	78	65.5

Play Frequency		
Every day	8	6.7
Several times a week	42	35.3
Once a week	16	13.4
Several times a month	29	24.4
Once a month	17	14.3
Other	7	5.9
Daily Playing Time		
4 hours or more	86	72.3
Less than 4 hours	33	27.7
Gamer Level		
Beginner	35	29.4
Intermediate Level	50	42.0
Advanced	34	28.6
Playing Environment		
At home	88	73.9
VR Cafes/Workplace/School	31	26.1

Table 1. Findings Regarding the Demographic Characteristics and Descriptive Information of the Participants

Data on identifying information about the VR game are also included in Table 1. According to the research findings, it is seen that the participant groups who play VR games several times a week, once a week and a few times a month are in the majority. Nearly half of the participants (42%) have an intermediate level of playing, while those who play at the beginner level (29.4%) and advanced level (28.6%) are almost equal to each other. Finally, VR gamers often prefer home for gaming.

In the study, the participants were asked questions about the types of VR games they played and the devices they played. The word cloud in Figure 1 contains the findings related to this. Kuckartz & Rädiker (2019) state that the size of the words in the word clouds shows the frequency of their repetition by the participants. Participants show that game genres such as Action, FPS, Shooter, Sports, Horror, Fighting and Racing are played more. Among the gaming devices, Sony Playstation has come to the fore as the most preferred device compared to the others. In addition, Oculus Quest stands out as the second most preferred device by the participants.

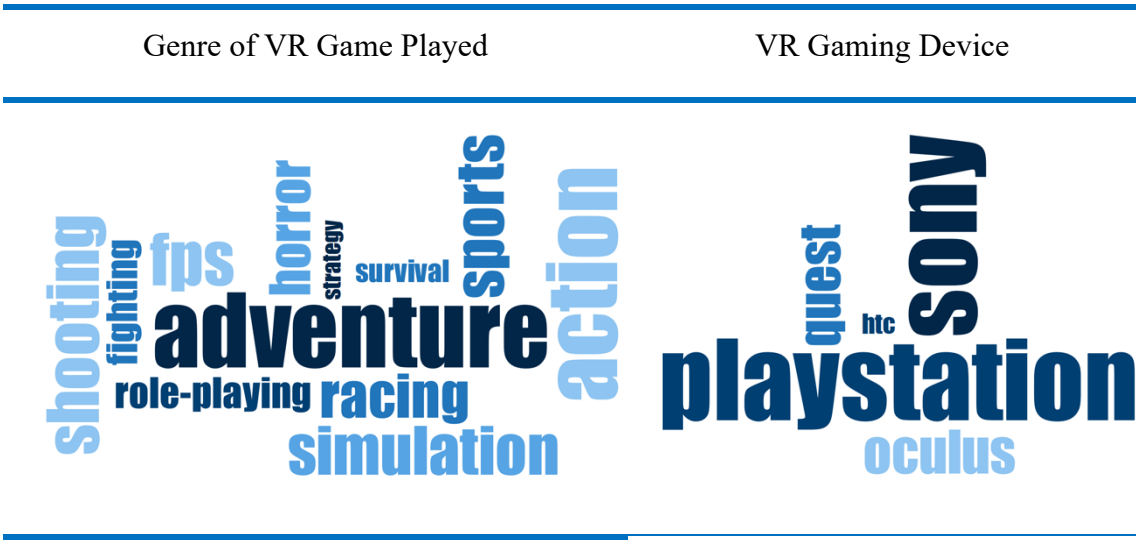

Figure 1. Word Cloud Showing Participant Views on Genre of VR Game Played and Device Played

Table 2 shows the explanatory factor analysis for the participants' VR Games Gratifications Factors scale. The expressions in the scale were analyzed in six dimensions in a way that they were distributed in six dimensions in accordance with their originality. The KMO (Kaiser Meyer Olkin) test was used to determine the scale's suitability for factor analysis (Coşkun, et al., 2019). This value, which was determined as 0.836 according to the KMO test results, is above the expected value of 0.700 in social sciences. As a result of the same test, the Barlett Test of Sphericity (0.00): p<0.05; Chi-Square: 991.4221; df. was found to be 231. As with the KMO value, other results determined also show that the factor analysis carried out has statistical consistency.

	Total Var.	**Cr.**	**Art.**	**Std.**	**Factor Load**
Competition	14.83	**Alpha**	**Cover.**	**Deviation**	
		0.877	3.95	0.796	
When I lose the game to someone, I want to play it again immediately.					,835
I get sad when I lose the game.					,742
I want to prove to my friends that I am good at games.					,732
It is important for me to be the most talented gamer to play the game.					,508
	Total Var.	**Cr.**	**Ar. Ave.**	**Std.**	**Factor Load**
Challenge	13.27	**Alpha**	3.82	**Deviation**	
		0.781		0.696	
I play until I finish a part of the game or win the game.					,717
I enjoy doing new and creative things in the game.					,692
I feel satisfied when I get to the next level in the game.					,582
I pride myself on mastering a part of the game.					,518

	Total Var.	Cr.	Ar. Ave.	Std.	Factor Load
Diversion	10.75	**Alpha**	4.21	**Deviation**	
		0.789		0.608	
While playing games, I forget some problems in my life.					,832
I relieve the stress of the day by playing games.					,710
Playing relaxes me.					,678
I play games when I have other things to do.					,665
	Total Var.	**Cr.**	**Ar. Ave.**	**Std.**	**Factor Load**
Fantasy	8.94	**Alpha**	4.10	**Deviation**	
		0.735		0.693	
I'm excited to take on a second person in games.					,805
I can pretend to be someone else or somewhere else in games.					,706
I can do things in games that I can't do in real life.					,566
I want to do things in games that I cannot do in real life.					,639
	Total Var.	**Cr.**	**Ar.**	**Std.**	**Factor Load**
Arousal	8.29	**Alpha**	**Ave.**	**Deviation**	
		0.688	3.91	0.683	
I never lose my excitement throughout the game.					,729
My adrenaline level rises while playing games.					,707
My emotions are activated when I play.					,604
Playing gives me excitement.					,507
	Total Var.	**Cr.**	**Ar.**	**Std.**	**Factor Load**
Social Interaction	7.66	**Alpha**	**Ave.**	**Deviation**	
		0.649	3.76	0.860	
We often play games with my group of friends.					,763
I stay in touch with my friends by playing games.					,418

Principal Components Analysis with Varimax Rotation: *Total Variance Explained: 63.769 %; Kaiser-Meyer-Olkin Sample Size: %, 836; Barlett Test of Sphericity (0.00): p<0.05; df. 231; Chi-Square: 991.4221 Rating Range (For All Dimensions [1] Strongly Disagree – [5] Strongly Agree)*

Table 2. VR Games Gratifications Factors Scale Explanatory Factor Analysis Findings

As a result of the explanatory factor analysis of the VR Games Gratifications Factors scale, the total explained variance for the six structures was determined as 63,769%. The dimensions in the scale are competition, challenge, diversion, fantasy, arousal, and social interaction. The variances explained according to the resulting dimensions were 14.83%, respectively, in Table 2; 13.27%; 10.75%; 8.84%; 8.29% and 7.66%. The Cronbach Alpha values of the dimensions obtained in the scale are

0.877 for competition, 0.781 for challenge, 0.789 for diversion, 0.735 for fantasy, 0.688 for arousal, and 0.649 for social interaction. The factor loads of the expressions constituting the dimensions were realized as values varying between 0.418 and 0.835.

In the study, when the VR Games Gratifications Factors scale was adapted to Turkish, CFA (Confirmatory Factor Analysis) was performed to test the accuracy of the structure that emerged as a result of the EFA (Exploratory Factor Analysis) for the scale. Significance (p=0.00<0.05) was determined in the CFA analysis. In order to evaluate the fit of the model in factor analysis, values such as CMIN/df (Chi-square / Discrepancy Divided by Degree of Freedom), CFI (The Comparative Fit Index), GFI (The (Adjusted) Goodness of Fit), RMSA (The Root Mean Square Error of Approximation), which are closely used in the literature, were examined.

Value	Good Fit*	Acceptable Fit*	Model Measurement Value	Result
X^2/df	0≤χ2/df≤3	3<χ2/df≤5	2,175	Good Fit
GFI	0.95≤GFI≤1.00	0.90≤GFI<0.95	0.93	Acceptable Fit
NFI	0.95≤GFI≤1.00	0.90≤GFI<0.95	0.95	Good Fit
IFI	0.95≤GFI≤1.00	0.90≤GFI<0.95	0.97	Good Fit
CFI	0.97≤CFI≤1.00	0.90≤CFI<0.97	0.96	Acceptable Fit
AGFI	0.90≤AGFI≤1.00	0.85≤AGFI<0.90	0.88	Acceptable Fit
RMSEA	0≤RMSEA≤0.05	0.05≤RMSEA<10	0.07	Acceptable Fit

Table 3. Comparison of Fit Index Values and Fit Values of the Measurement Model Source: Karagöz, 2017)

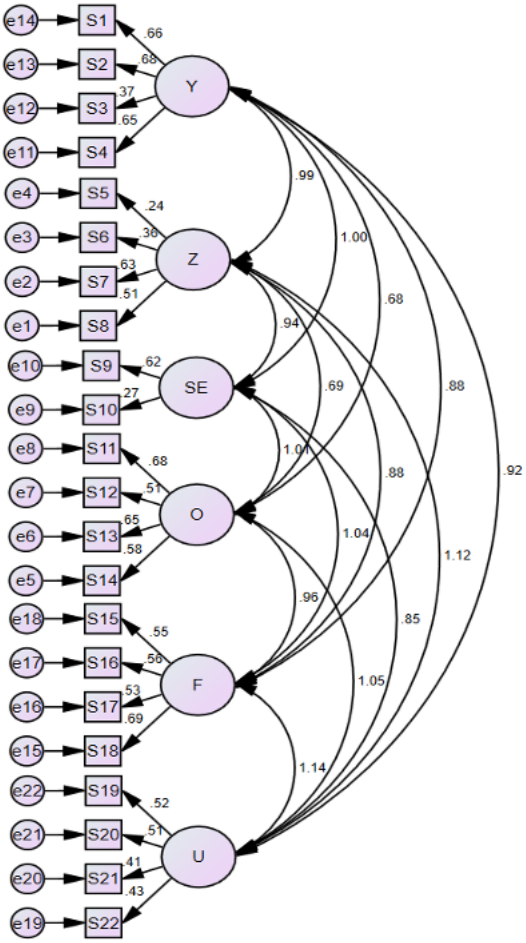

Figure 2. VR Games Gratifications Factors Scale Confirmatory Factor Analysis

Among the symbols in the model, *Y* represents competition (yarışma), *Z* challenge (zorluk), *SE* social interaction (sosyal etkileşim), *O* diversion (oyalanma), *F* fantasy (fantezi/hayal kurma), *U* arousal (uyarılma) dimensions. The fit values of the study show the suitability of the confirmatory factor analysis. Good fit values in the study X2/df (2.175/0≤χ2/df≤3), NFI (0.95/0.95≤NFI≤1.00), IFI (0.97/0.95≤IFI≤) 1.00) values. Acceptable fit values are GFI (0.93/0.90≤GFI<0.95), AGFI (0.88/0.85≤ AGFI<0.90), CFI (0.96/0.97) ≤CFI≤1.00) and RMSEA (0.07/0.05≤RMSEA<10) coefficients. These fit values also show the significance of the CFA (Meydan & Şeşen, 2015).

Discussion and Conclusion

Although the popularity of VR games among gamers and their share of the game market has been growing, it is an unexplored area for researchers. This study revealed the six gratification factors obtained from VR games, the demographics of the gamers and the six dimensions related to the gaming characteristics. The scale named "Video Game Uses and Gratifications" (Sherry et.al., 2006) was adapted into Turkish which can be used in VR game use and gratification studies. Although the research is limited to the province of Istanbul and 119 participants, it has the claim to be pioneering research.

Research findings show that VR games provide six types of gratifications:

competition, challenge, diversion, fantasy, arousal and social interaction. Competition as a gratification comes from gamers wanting to be the most talented gamer and beat their opponents, being upset when they lose a game and wanting to try again. This is an expected factor to derive from VR games, as researchers consider competition to be a core component of gaming (Hayeon et al., 2013, p. 1703). Challenge is undoubtedly the most important experience gamers look for in digital games (Denisova et al., 2017, p. 2511) and this gratification is a factor that comes from the fact that gamers are proud of mastering a level, want to progress in the game, finish the game and do new things in the game. The diversion gratification obtained from VR games is about forgetting real-life problems, relieving the stress of the day, relaxing, and getting away from responsibilities while playing games. Besides serving as a diversion, video games are entertaining and can be a pastime that gives one a sense of delight and success after completing a challenging task. Being able to act like someone else in games and doing things that cannot be done in real life constitute the fantasy dimension. Fantasy is a significant factor in what makes games enjoyable and appealing according to several experts who have researched digital games. All of the physical objects present in video games arouse fantasy allowing gamers to lose themselves in the game (Youngkyun & Beomkyu, 2013, p. 1981). Arousal, which is used to indicate a physiological response to stimuli, namely increased heart rate and blood pressure (Cusveller et al., 2014, p. 165), refers to excitement, increased adrenaline, and activation of emotions during play. Playing games with a group of friends and staying in touch with friends while playing games creates the social interaction gratification dimension of VR games.

Future studies on VR games may help us to understand the relationship between the demographic characteristics of the gamers and the gratifications obtained, and the relationship between the game-playing characteristics of the gamers and the gratifications obtained. Since this study used the snowball sampling method, demographic variance remained limited, but the inclusion of individual differences in future research may provide a better understanding of the impact of these differences on VR gaming gratification and game-play characteristics. Additionally, further studies may shed light on motivations for playing VR games by revealing not only the gratifications obtained but also the gratifications sought.

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