# The Hidden Danger in Human Computer Interaction: A Research Based on Online Games and Cultural Values in Turkey

**Şefika Tanık**

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Approval of the Institute of Graduate Studies and Research

————————————————————
Prof. Dr. Ali Hakan Ulusoy
Director

I certify that this thesis satisfies all the requirements as a thesis for the degree of Master of Business Administration.

————————————————————
Prof. Dr. Melek Şule Aker
Chair, Department of Business
Administration

We certify that we have read this thesis and that in our opinion it is fully adequate in scope and quality as a thesis for the degree of Master of Business Administration.

————————————————————
Prof. Dr. Melek Şule Aker
Supervisor

Examining Committee
——————————————

1. Prof. Dr. Melek Şule Aker        ————————————————————

2. Prof. Dr. Tülen Saner            ————————————————————

3. Asst. Prof. Dr. Mehmet İslamoğlu  ————————————————————

# ABSTRACT

For most of human history, knowledge has been acknowledged as being objective. It has been something that most people can access, but not something that many can create. However, The Internet is changing this with the use of information technologies and Human-Computer Interaction (HCI) is also helping it. HCI is increasing the adaptability of knowledge as well as its adoptability. This situation leads to some radical changes that will have profound effects on societies. For example, virtual environments created by HCI-based techniques by considering cultural elements can leave irreversible traces on local cultures.

This study aims to draw attention to the potential hidden dangers in HCI for local cultures by focusing on the cultural effects of online games. Hofstede's Individual Cultural Values Scale was applied to determine the changes in the cultural values of the players. Playing history of the players was also taken into account. In addition, the study tested the moderating effects of age and gender on the relationship between the cultural values and online games.

Snowball, non-probability sampling technique was used in this study. Starter point for snowball technique was determined as 5 Turkish twitch broadcasters playing online games in their broadcasts. 486 data was collected in two weeks. Of these, 21 were initially eliminated because the participants stated that they were not Turkish citizens by birth. Therefore, the sample based on 465 units of analysis. The results show that while power distance and uncertainty avoidance perceptions of online game players are higher than non-players, long term orientation perception is lower and these

differences change according to their playing history. In addition, it is found that age has a moderating effect on the relationship between power distance and online games.

Final section of the study contains more detailed description of the results, limitations, cultural and managerial implications and some suggestions for future studies.

**Keywords:** Human computer interaction, Cultural computing, Online games, Hofstede, Turkey.

# ÖZ

İnsanlık tarihinin çoğunda bilgi, nesnel olarak görülmüştür. Bilgi, birçok insanın erişebileceği bir şey iken yaratabileceği bir şey değildir. Ancak internet, bilgi teknolojilerinin kullanımıyla bu durumu değiştirmekte ve İnsan-Bilgisayar Etkileşimi (İBE) bu sürece yardımcı olmaktadır. İBE, bilginin benimsenebilirliğini olduğu kadar uyarlanabilirliğini de arttırmaktadır. Bu durum toplumlar için derin etkileri olacak radikal bazı değişimlere yol açmaktadır. Örneğin, HCI tabanlı tekniklerle kültürel unsurlar dikkate alınarak oluşturulan sanal ortamlar, yerel kültürler üzerinde geri dönülemez izler bırakabilmektedir.

Bu çalışma, İBE kullanımı ile tüm dünyada geniş bir yayılım imkanı bulan çevrimiçi oyunların kültürel etkilerine odaklanarak İBE'nin yerel kültürler üzerindeki olası gizli tehlikelerine dikkat çekmeyi amaçlamaktadır. Kullanıcıların yani oyuncuların kültürel değerlerindeki değişimleri belirlemek için Hofstede'nin Bireysel Kültürel Değerler Ölçeği uygulanmıştır. Ek olarak, bu değişimler üzerinde oyuncuların oyun geçmişinin etkileri incelenmiştir. Ayrıca çalışma, kültürel değerler ve çevrimiçi oyunlar arasındaki ilişkide yaş ve cinsiyetin düzenleyici etkilerini de test etmektedir.

Bu araştırmada kartopu, olasılıksız örnekleme tekniği kullanılmıştır. Kartopu tekniği için başlangıç noktası, yayınlarında online oyun oynayan 5 Türk twitch yayıncısı olarak belirlenmiştir. İki hafta içerisinde 486 veri toplanmıştır. Bunların 21'i, katılımcıların doğuştan Türk vatandaşı olmadıklarını belirtmeleri nedeniyle başlangıçta elenmiştir. Bu yüzden 465 veri analiz edilmiştir. Sonuçlar, çevrimiçi oyun oynayanların güç mesafesi ve belirsizlikten kaçınma değerlerinin oyuncu olmayanlara

göre daha yüksek, uzun vadeli düşünme değerlerinin ise daha düşük olduğunu ve bu farklılıkların oyuncuların oyun geçmişine göre değiştiğini göstermektedir. Ayrıca, yalnızca güç mesafesi ile çevrimiçi oyun arasındaki ilişkide, yaşın düzenleyici bir rol oynadığı bulunmuştur.

Çalışmanın son bölümü, sonuçların daha ayrıntılı bir tanımını, çalışmanın sınırlarını, kültürel ve yönetsel çıkarımları ve ayrıca gelecekteki çalışmalar için bazı önerileri içermektedir.

**Anahtar Kelimeler:** İnsan bilgisayar etkileşimi, Kültürel hesaplama, Çevrimiçi oyunlar, Hofstede, Türkiye.

# DEDICATION

As an individual who has studied business and commerce and pursues his current career in the academic field, when I look at the world from my point of view, I can sincerely say that humanity rises on the hands of people who have the courage to pursue innovations. For me, the most fundamental driving force of this rise consists of the real scientists. It can be seen that these scientists are working in different occupations such as educators and engineers.

After discovering this fact, I pondered for a while how I could use my existing resources to help these people that I see at the top of the pyramid, and accordingly, I started my master thesis. Then I realized that dreaming big does not work in this first step and I had to change my subject, succumbing to what time brought. However, I could not find any reason to not dedicate this work to this noble people.

That's why I dedicate my thesis to them.

# ACKNOWLEDGEMENT

While writing my thesis, I had the opportunity to observe the academic community both internally and externally. Some situations that I encountered in my acceptance and adaptation process slowed me down by causing my questions to diversify and deepen. In this respect, as a master student, I am aware that I was a difficult student. Despite all these conditions, there was Prof. Dr. Melek Şule Aker as a savior. I would like to express my respect and gratitude to her.

At the same time, I would like to convey my love to my family, who supported me in all circumstances and let me choose my own path by trusting me instead of confining me to their own patterns.

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# LIST OF ABBREVIATIONS

CFA    Confirmatory Factor Analysis

CO    Collectivism

CVSCALE  Hofstede's Individual Cultural Values Scale

HCI    Human-Computer Interaction

LT    Long-Term Orientation

MA    Masculinity

MMI    Man-Machine Interface

PO    Power Distance

UN    Uncertainty Avoidance

UNESCO  The United Nations Educational Scientific and Cultural Organisation

# Chapter 1

# INTRODUCTION

## 1.1 Research Gap

For years, different scholars have investigated the role of culture on digital games or in other words video games. "Many researchers regard the gaming culture as something distinct or separate from a constructed mainstream culture because of the tendency to focus on the entertainment medium niche" (Chen, 2013, p. 414). Few researchers have paid attention to the effects of games on the existing culture and none of them investigate the effects of online games in a general framework. The reason for such an avoidance may be the thought that the impact of online games on cultural values is dependent on the game in question. However, it is expected that the existing characteristics of individuals belonging to a specific culture lead them to play similar games, and as a result, the cultural values of the society change according to these games. Looking at this fact from the principle of sufficient reason, it is seen that there is no need to avoid examining the effects of online games on culture in a general framework, if enough sample size can be reached.

In addition, when the developments in online games in the last ten years are examined, it is seen that games that have found a wide spread all over the world with the use of Human-Computer Interaction (HCI) techniques have the probability to leave irreversible traces on local cultures and support the transition to a single global culture that can be defined as "modernity" in the long run. Especially, considering the

increasing sectoral growth in the game industry and the developments in the field of child-game interaction, the future of cultures deserves to be investigated. However, no study has been found in the literature that focuses on the cultural effects of online games in a general framework and/or the detrimental effects of HCI on local cultures. In responding to the lack of such studies, this study will firstly draw attention to the potential dangers of HCI and its sub-area, cultural computing, and then, explore the impact of online games on Turkish culture by using Hofstede's dimensions.

## 1.2 Research Scope

This research is limited to Turkish online game players and their non-player relatives and friends. Additionally, in order to keep the cultural effects of external factors at a minimum, participants who were not Turkish citizens by birth were excluded from the study and the possibility of a significant difference in the answers of Turkish citizens who had continiously lived abroad for more than 1 year was analyzed and it was decided whether they would be included in the research.

## 1.3 Research Objectives

The main purposes of this study are to draw attention to the potential cultural dangers of HCI and to investigate on the following:

- To examine the effects of online games on power distance, uncertainty avoidance, collectivism, long-term orientation and masculinity degree of Turkish online game players.

- To test the moderating effect of gender and age on the relationship between online games and cultural values.

- To explore the effect of playing history on the cultural values.

## 1.4 Research Questions

Based on the objectives of this study, the following research questions were formed:

1. What is the Power Distance, Uncertainty Avoidance, Collectivism, Long-Term Orientation and Masculinity degree of Turkish online game players?

2. How do age and gender effect cultural values?

3. Do gender and age moderately effect the relationship between online games and cultural values?

4. Does playing history effect cultural values?

## 1.5 Research Model
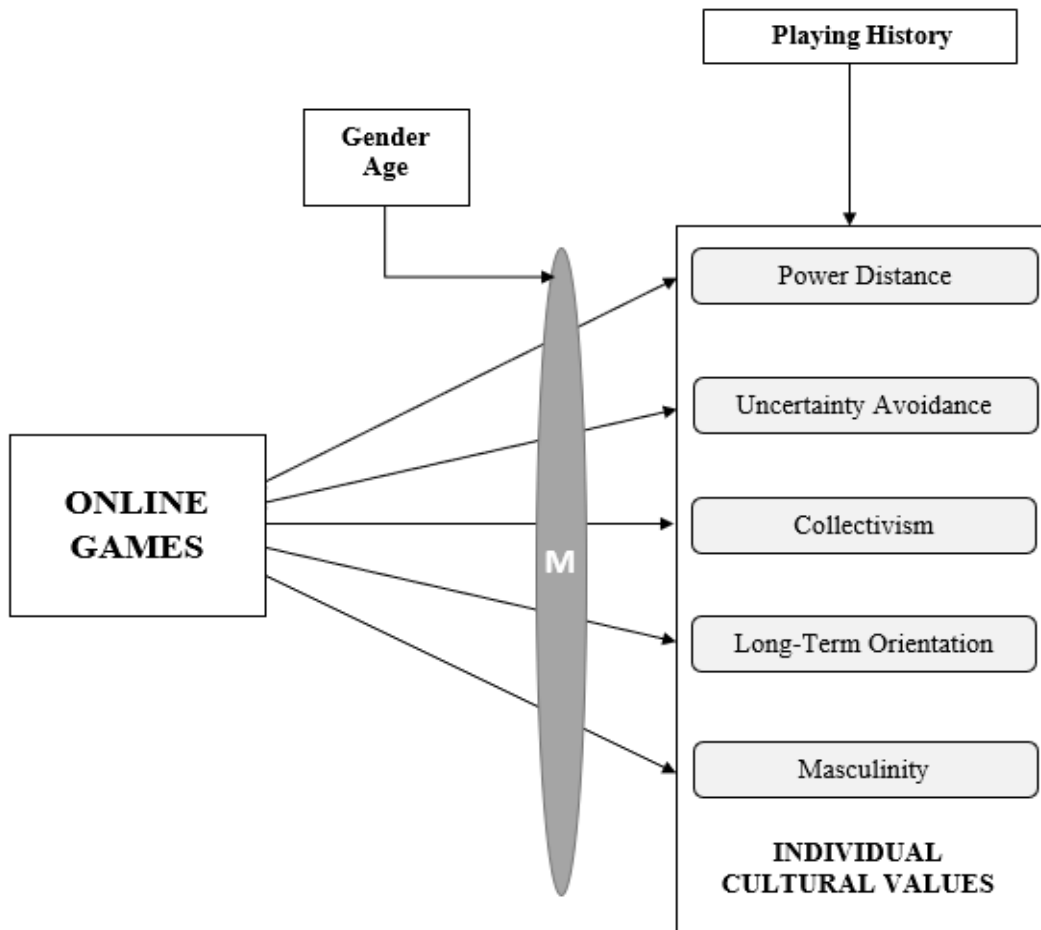


Figure 1: Research Model

According to Hofstede's Individual Cultural Values Scale (CVSCALE); Power Distance (PO), Uncertainty Avoidance (UN), Collectivism (CO), Long-Term Orientation (LO) and Masculinity (MA) are the main dominant metrics in Hofstede's

classification. In previous researches studying Hofstede's model, it has seen that age and gender are influential on individuals' orientations on these cultural factors (Webster Rudmin et al., 2003; Türker, 2020; Barreto et al., 2021). Therewithal, it is thought that playing history may also affect changes in these dimensions. In line with these explanations and the explanations made in the research gap title, the research model in Figure 1 was developed.

## 1.6 Research Significance

HCI and cultural studies have a strong and important relationship with marketing, management, technology, sociology, psychology, anthropology, art, aesthetics, theology etc. Therefore, the results of this study are significant for people operating in these fields. Additionally, the subject and results of this research are also important for all living organisms, as it is tried to shed light on the future of the world by revealing the cultural effects of HCI that may cause the dissolution of national cultures.

## 1.7 Research Structure

This study is classified into five chapters, chapters one through five.

Table 1: Research Structure

| Chapter 1 | Introduction |
|-----------|--------------|
| Chapter 2 | Literature Review |
| Chapter 3 | Methodology |
| Chapter 4 | Data Analysis And Interpretation |
| Chapter 5 | Conclusion |

Chapter one "introduction": this section provides an overview of HCI, cultural studies and game studies in the research gaps title. Later, the study goes further to explain the

main topic by highligting research scope, objectives, questions, model, significance and also structure.

Chapter two "literature review": this section gives information about previous studies on HCI, human-game interaction, culture and technology, cultural computing, digital games, online games, cultural studies and Turkish culture, respectively, and clarifies why this study was chosen and which scale was applied to.

Chapter three "methodology": this section contains explanations about research design, research hypotheses, sample selection, sample size, survey design, data collection methods, and ethical considerations.

Chapter four "data analysis and interpretation": this section includes analyzes of data collected for the research. These analyzes are descriptive analysis, normality test, Mann-Whitney U test, Kruskal-Wallis test, reliability test (Cronbach`s Alpha), Spearman correlation test, confirmatory factor analysis (CFA), and some hypothesis testing analyzes.

Chapter five "conclusion": this section includes a more detailed description of the results, limitations of the study, cultural and managerial implications, as well as some suggestions for future studies.

# Chapter 2

# LITERATURE REVIEW

## 2.1 Human-Computer Interaction

Human-computer interaction (HCI), which emerged in the 1980s, is the study of how people interact with computers and to what extent computers are or are not designed to meet their needs (Abras et al., 2004). It is also sometimes referred to as man-machine interface (MMI).

HCI researches cover a wide range of topics, from the design of individual computer applications to the design of complete human-computer systems. It is studied in terms of human, computer and interaction. In HCI, the end user is human. Human needs and characteristics are perception, thinking, attention capacity, mobility, memory, learning and forgetting speed, mental abilities and age. Computer is considered as software and hardware. Interaction, on the other hand, is considered as the user telling the computer what he wants and the computer producing the result and delivering it to the user. Considering that today's human-computer interaction begins with knowing the characteristics of people before they are born, it can be understood how effective and concrete this structure is.
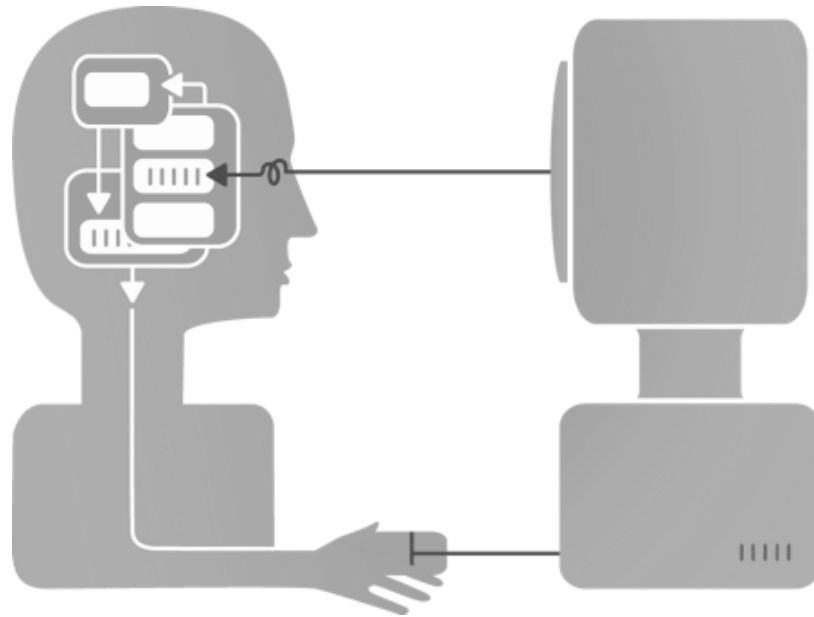
Figure 2: An Explanatory Illustration for HCI

HCI is a multidisciplinary field that draws on insights from many different fields such as psychology, sociology, anthropology, ergonomics, computer science, engineering, marketing etc. and its boundaries are constantly changing (Preece & Rombach, 1994). Therefore HCI research tends to be highly eclectic with researchers borrowing methods and theories from a wide variety of disciplines. HCI is also a thriving area of commercial activity, with a large and growing number of companies offering products and services related to human-computer interaction. These companies range from small start-ups to large multinational corporations.

As a result of this increasing trend, HCI researches have also been motivated by a growing awareness of the social and ethical implications of computer technology. The emerging field of HCI for social good applies HCI methods and theory to the design and evaluation of systems that have the potential to make a positive social impact in areas such as healthcare, education, sustainability and international development (Avouris et al., 2018; Floridi et al., 2020).

On the other hand, HCI can have some harmful consequences for the society. Many examples of unethical HCI researches can be cited. For example, in 2012, it was revealed that the Facebook emotion manipulation study collected data from nearly 700,000 users without their knowledge or consent (Tufekci, 2015). The study showed that emotions can be spread through social networks, and that users are susceptible to emotional manipulation.

Another example of unethical HCI research is that in 2015, it was revealed that the US National Security Agency (NSA) had been using HCI research to spy on users. The NSA used HCI techniques to design and implement surveillance programs that collected user data without their knowledge or consent (Aradau & Blanke, 2015).

There are also examples of HCI researches that can have negative impacts on people's physical and mental health. For example, in 2017, it was revealed that the US Food and Drug Administration (FDA) had approved a medical device that was designed using HCI techniques. The device, known as the Implantable Cardioverter Defibrillator (ICD), is a device that is implanted into the chest of a patient. The device uses HCI techniques to monitor the heart and deliver electric shocks to the heart if it detects a life-threatening arrhythmia. However, the ICD has been linked to serious health complications, including death. In fact, several studies have shown that the ICD can cause more harm than good. As a result, the FDA has issued a warning about the potential risks of the ICD.

When the studies on HCI are examined, there are some studies that has focused on culture and cultural computing (Rau et al., 2008; Clemmensen & Roese, 2009; Irani, 2010; Salgado et al., 2015; Sharma et al., 2018; Grimal et al., 2021). Nevertheless, no

large-scale studies on the cultural effects of HCI or HCI-based technologies have been found. "The increased productivity and capacity for expression made possible by electronic networks could be a cause for cultural confusion and disarray as much as for creativity"(Memmi, 2013, p.82). Therefore, it is conceivable that HCI may contain some hidden dangers for local cultures.

In this study, this dangers are examined by focusing on online games. Because HCI is widely used by game programmers, since "Considerable part of how games mean as cultural artifacts depends on how agent/reviewers apply a variety of influential forces in the work they do of evaluating titles for agent/consumers" (McAllister, 2004, p. 139).

### 2.1.1 Human-Game Interaction
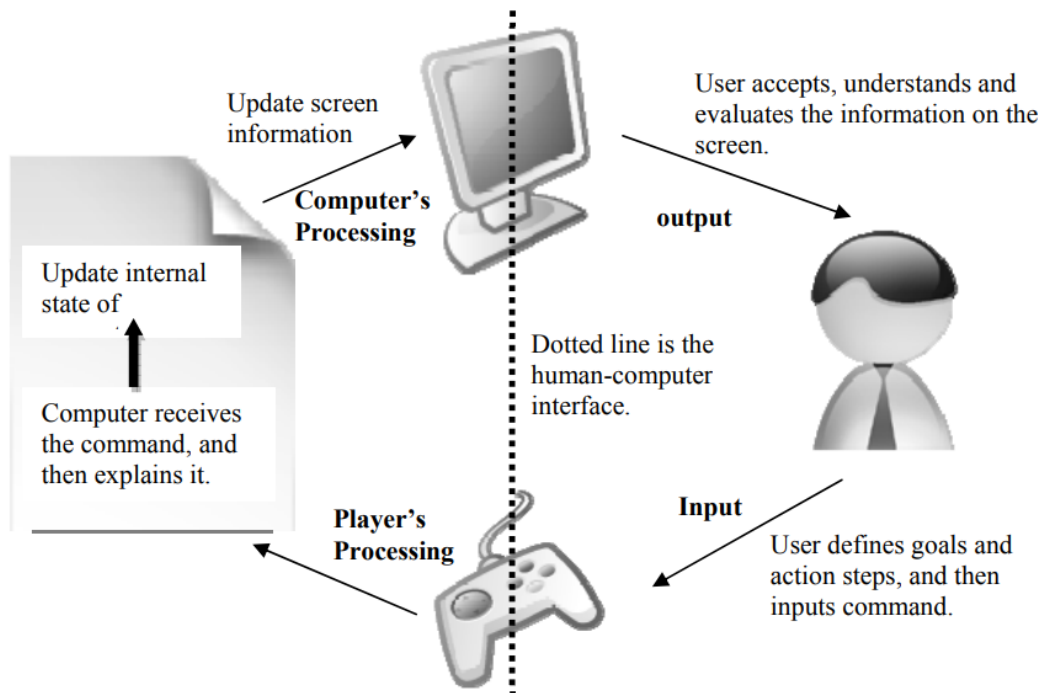


*Source: Cai (2009)

Figure 3: Human-Game Interaction

Game designers use all kinds of elements to visualize the game and enrich its content in game design, but the most important thing here is interaction (Cai, 2009). HCI in games consists of the following parts:

- The first stage in which the computer presents the virtual game environment to the players with pictures, sounds or other modes of participation is game output. At this stage, the user accepts, understands and evaluates the information.

- The second stage at which players make the action decision is called player processing.

- The third stage in which players express their wishes using hardware input devices is called player input. In this phase, the user defines the goals, turns the steps into action and enters commands.

- The fourth stage in which the computer calculates the corresponding scores of the actions of the players in accordance with the rules of the game is called computer processing.

After these stages are followed in order, it is returned to stage one and the next ring of the HCl cycle occurs. The looping process of these four stages creates human-computer interaction in a game.

There are also some differences between the games and the traditional effects of HCI. Barr et al. (2007) summarized these differences as follows:

- Games focus on process rather than outcome.

- The sound and graphics used in the game appeal to the mood rather than the functionality.

- While the goals of creativity practices are generally defined outside the practice, the goals of games are defined in the game world.

- While creativity applications try to remove the restrictions on the user, games try to impose it.

- Innovations in control and content systems in games tend to exceed creativity apps (Barr et al., 2007).

## 2.2 Culture and Technology

Culture varies from one community to another, depending on many differences such as geographic location, weather, socioeconomic status, and religion. This cultural diversity is an interesting and broad topic for researchers and to date, many scientific definitions of culture have been made (Woods, 2012).

Tylor (1871) defines culture in an anthropological perspective as "complex whole which includes knowledge, belief, art, law, morals, custom, and any other capabilities and habits acquired by man as a member of society" (p. 1).

Laland and Hoppitt (2003) defines that culture is "group typical behavior patterns shared by members of a community that rely on socially learned and transmitted information" (p. 151).

Whereas, The United Nations Educational Scientific and Cultural Organisation (UNESCO) defines culture "as the set of distinctive spiritual, material, intellectual and emotional features of society or a social group, that encompasses, not only art and literature, but lifestyles, ways of living together, value systems, traditions, and beliefs" (UNESCO, 2001).

Hofstede (1980) defines culture in his book, as "The collective programming of the mind that distinguishes the members of one group or category of people from others" (p. 13). As a result of this programming, it can be said that people are not born with a certain culture, but they learn it. Meantime, as Pyae (2018) said "People may also not notice the existence of culture in the same community. They may only know when they are in other community where different cultures and customs are practiced" (p. 106). Because culture symbolizes abstract and concrete differences of a certain grup, ranging from a minority to a country or a region as a whole and represents some cultural values shared implicitly or explicitly about what is good or bad in a society (Williams, 1970; Heimgärtner, 2013). Looking at these differences, people can get to know their fellow members. For example, a Turk living in America can recognize other Turks by looking at their clothing, language, appearance and other social norms.

In order to make this recognation factors more clear, common cultural components have been tried to be explained in many books and scientific articles. Terpstra (1994) reveals the variables in the cultural framework he created as language, religion, education, aesthetics, social organizations, attitudes and values, politics and law, technology and material culture. While Usunier and Lee (2013) list four cultural major elements: language, institution, material production and symbolic productions; Barkan (2011) lists the major elements as language, norms, values, artifacts and symbols. In their book "Elements of Culture", Andreatta and Ferraro (2012) define three components of culture: material object, ideas-values-attitudes and behavior patterns. Then, they examine the cultural components in sub-titles as language and communication; subsistence patterns, environment, and economics; kinship, marriage,

and family; sex, gender, and sexuality; political organization and social control; supernatural beliefs; art.

In general, Culture Wheel in Figure 4 is a good combination of these cultural components. It is a diagram that is often used to learn about important aspects in the lives of individuals from other cultures.
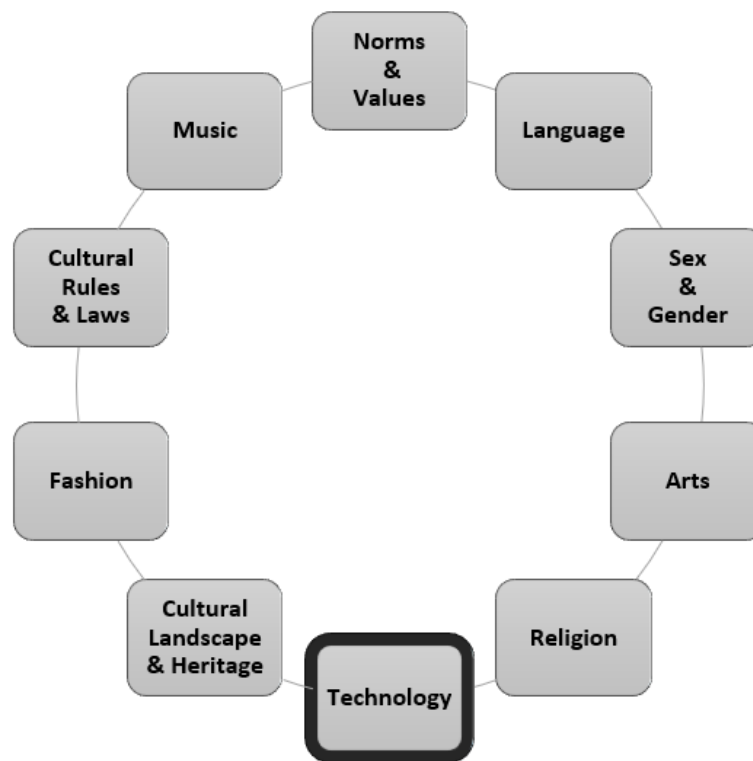


Figure 4: Wheel of Culture

When looked at the relationship between culture and technology, it can be said that they have an inter-dependence relationship. "Technology connects people from different customs and traditions to share global culture in terms of networking, communication, entertainment, and education" (Pyae, 2018, p. 109). As technology develops, people's culture also changes to suit the technological advancement. Opler and Steward (1956) describe that "technology was the window between the natural

world and human society and culture" (p. 19). Due to technological improvements, we're redefining how we interact with each other, and how we connect with the world around us. In order to better understand the relationship between technology and culture, it would be appropriate to examine cultural computing, a sub-field of HCI that looks at how cultural values and norms are being changed around the world through technology.

### 2.2.1 Cultural Computing

Cultural Computing is defined as "Integrating cultural aspects into the interaction, allowing users to experience an interaction that is closely related to the core aspects of his/her culture" (Rauterberg, 2006, p. 2). By using computer technology to calculate the impact of culture on the human unconscious state and self conscious state of mind, it provides a new trend to the research field of HCI. It "covers the cultural impact of computer systems on users, as well as requirements for the support of cultural innovation with a mixture of technology and cultural objects in a computer system" (Pyae, 2018, p. 105).
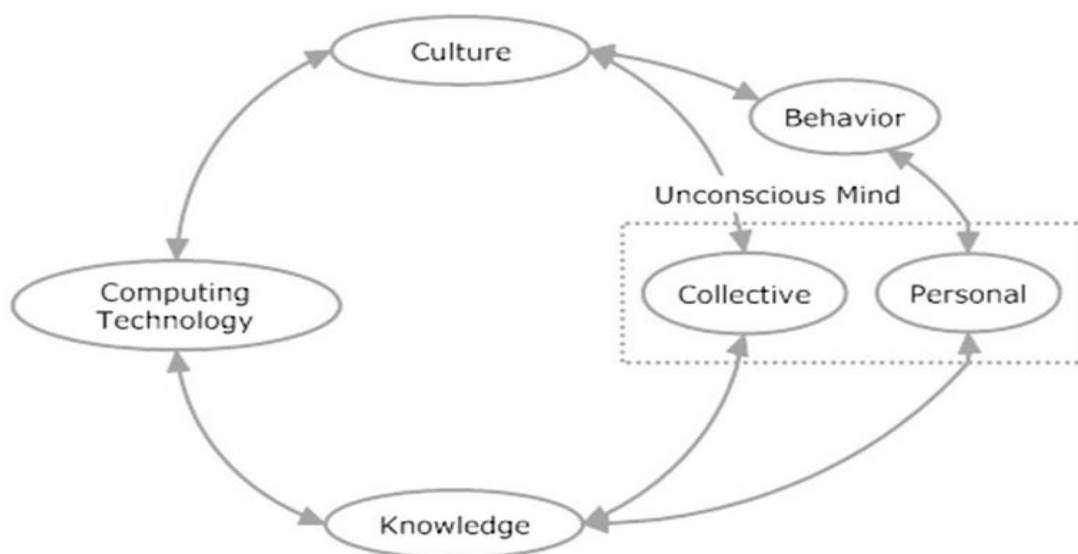


*Source: Sharma et al. (2018)

Figure 5: Relationship between Culture and Computing

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Cultural Computing is a field of research that examines the ways in which culture shapes our use of technology, and vice versa. It encompasses a wide range of topics from the study of how different cultures use technology in different ways, to the ways that technology can be used to preserve and promote cultural heritage. However, this kind of technology is essentially new in the history of mankind and studies in this area are limited. The word "cultural" is often used to describe something that is not technological, but the cultural revolution that computing will bring about is not just a matter of taste. It is a matter of how we live and how we think. The potential for computing technology to revolutionize culture is immense. It has already had a profound impact on how people communicate, work, and even think. As cultural computing continues to evolve, it is likely to have even more far-reaching effects on the culture and commerce of the world than it has over the past half century. As Memmi (2013) said "we are obviously faced with a cultural revolution, which has only just started and which deserves serious thought" (p. 84).

## 2.3 Digital Games to Online Games

An online game is a digital game that is played through the internet. Online gaming has greatly increased the scope and size of gaming culture and thus directed people of various ages, nationalities and professions to the game industry (Martey et al., 2014; Worth & Book, 2014; Schiano et al., 2014). However, before the spread of the internet and the emergence of online games, there were video games. For this reason, it is important to examine the existing literature on video games before entering online games in order to better see the development of the subject.

After the first known digital game 'Nim' developed in 1951 and 'Tennis for Two' developed in 1958, video games have classified into different categories. Young (2009) explains this development as follows:

> "In the 1980s, games such as Centipede, Space Invaders, Pac Man, and Donkey Kong were popularized. These were single-player games against the machine and getting good at the game only meant a high score and improvement of the gamers' eye-hand coordination. By the 1990s, gaming evolved from single-player games to gaming experiences. Gamers could become immersed in a virtual world that they helped to create. Games such as Doom and Quake were introduced that allowed players to create new rooms, customize their characters, and specify the kinds of weapons used. As the gaming revolution evolved, players could create rich, malleable environments from designer-generated fantasies to complex Hollywood movie themes. By the late 1990s, the gaming industry exploded. Manufacturers such as Sony and Microsoft have developed more sophisticated and interactive features into their games and the technology has become much more portable and mobile making online games accessible anytime and anywhere" (pp. 356-357).

As a result of this emerging diversification, digital video games have been played by many people around the world for different reasons. It has seen that while the main reasons to play games for elderly people are mental exercise, killing time and giving advice (Iversen, 2016); socializing, relieving stress and feeling strong are the reasons for children and young people to play (Gros, 2007). Looking at the studies on digital games, it is also seen that majority of the researches have concentrated on the effects of excessive play, addiction, medical and psychosocial consequences, personality and computer game play (Griffiths, 1991; Douse & McManus, 1993; Griffiths 1993; Griffiths & Dancaster, 1995; Phillips et al., 1995).

However, online games, which has found the opportunity to develop with the internet, have evolved into more than games. They became living, self-contained three-dimensional societies. A research by Ng and Wiemer-Hastings (2005) shows that playing games online can be a completely different experience than playing games offline. In Teng's research (2008), online game players reported higher scores in

openness, conscientiousness, and extraversion than did non-players. Because in online

games, players first decide on a character's race, type, history, heritage and philosophy

and then embark on future adventures with their own virtual versions by having

changes to socialize. "In the game, these interactive environments allow individuals to

experiment with parts of their personality, they can be more vocal, try out leadership

roles, and new identities" (Young, 2009, p. 357). Exposure to more variables during

online games than offline affects the characteristics of real-world players. Teng (2008)

explains this situation as follows:

> "Although frustrations in online games and real life are different, the activities
> required for success in online games and those in the real-world society have many
> features in common: various skills to be mastered, capabilities to be upgraded
> ("leveled-up"), team objectives to be achieved, career pathways to go through
> (game character development), tedious routine works to be done, enormous
> knowledge to be learned, and tough tasks to be accomplished (solving quests).
> These activities can improve job performance in the game world as well as
> performance in the real world" (p. 232).

Meanwhile, some researches on the impact of online games have shown some

detrimental effects (Douse & McManus, 1993). As Griffiths et al. (2004) have pointed

out "What data there are, suggest that gaming in general, particularly online fantasy

gaming, is associated with introversion, lower empathic concern, and low feminine

identity" (p. 379). However, these researches are more about excessive online gaming

rather than occasional or regular gaming. On the other hand, when the literature on

games and culture is examined, it is seen that some researches have handled games in

the context of culture. Many of these researches have focused on cultures in games or

subcultures coming with digital games (Winkler, 2006; Mayra, 2008; Williams &

Hendricks, 2014). However, none of them have paid attention to the effects of games

on the existing culture.

Nevertheless, there is an increasing demand for online games that cannot be ignored. Especially in recent years, the COVID-19 epidemic has caused a great increase in the demand for online games, causing people to stay at home during quarantine periods. In a world where many people cannot leave their homes, even people who have never played a game before have met the game industry. At the same time, the time spent in games has increased many times. According to Global Games Market Report (2021), during the pandemic period, game play times increased by 30 percent and there were approximately 2.7 billion online game players in the world in 2020. This is expected to reach 3.07 billion by the end of 2023 (Newzoo, 2021). Along with these expanding usage rates, there is a growing market revenue in the gaming industry, with the total of all gaming devices reaching $175.8 billion in 2021.

There are also console games, tablet games, desktop games, web games and mobile games in the market. But when looked at the future of online games, as the gaming industry moves into the digital age, virtual reality and 3D games will continue to enter the mainstream market with a host of new, revolutionary technologies that will serve as peripherals to enhance the digital gaming experience. In today's technology, Android, iPhone and Windows devices have become a popular choice for online gaming platforms. Business and payment models for online games are also getting more and more diverse. It can also be said that developments in the gaming industry are the other main reason for the increase in the demand for online games. When all these are evaluated, the past and present of the games can be summarized generally as in Table 2.

Table 2: Transformation in Gaming Sector

|  | **PAST** | **PRESENT** |
|---|---|---|
| **AUDIENCE** | Mostly Hardcore Gamers | Children, Women, Seniors, Hardcore Gamers |
| **BUSINESS MODEL** | Box Sales | Box Sales, Virtual Goods, Subscription, Advertising, App Store/Games as a Service, Retail, E-Commerce |
| **PAYMENT** | Cash, Credit/Debit Card | Cash, Credit/Debit Card, Mobile Payment, Credit Card-Linked Mobile Devices, E-Wallets |
| **PLATFORM** | PC, Console | Pc, Console, Web Browser, Tablet, Smartphone |
| **INTERACTIVITY** | Single Players, Geo-Limited Multi-Play | Interaction with the Whole World |

*prepared according to IBIS Capital (2016)

### 2.3.1 Gaming Culture

"PLAY is older than culture, for culture, however inadequately defined, always presupposes human society, and animals have not waited for man to teach them their playing. We can safely assert, even, that human civilization has added no essential feature to the general idea of play" (Huizinga, 1955, p. 1).

According to Huizinga (1955), who claims that the beginning of everything related to humanity on earth is game, games have existed since the existence of humanity and are an inseparable part of human culture. In fact, wars, philosophy, politics, poetry, law and religion can be identified with the game culture. Therefore it can be said that "much like cultural studies, the study of digital games has relied on borrowing techniques from other disciplines, including anthropology, economics, philosophy, psychology, film studies, and so on" (Shaw, 2010, p. 405). This situation can also be described with Winkler's (2014) definition of gaming culture as "marked by modes of dress, specific linguistic jargon, and a sense of solidarity. Because gamers often wear clothing that references specific games, comics, television shows, or movies that are not widely known outside of a small following" (p. 147).

When the development of game culture is examined, it is seen that initially creating games that fit the local culture was a key factor for the success of game programmers (Heimgärtner, 2013; Kyriakoullis & Zaphiris, 2016). In Japan, they created games such as Pac-Man or Space Invaders, that were influenced by local culture, and became popular among Japanese people. In the late 80's and early 90's, a new generation of game programmers emerged, who were not limited to only creating games that were influenced by local culture. Instead, they started creating games that were influenced by global culture. For example, in the early 1990's, street fighting games such as Street Fighter II and Mortal Kombat became popular. These games were very popular in the United States and Europe, but they were not as popular in Japan. However, in the late 1990's, a new type of street fighting game called Tekken became popular in Japan. The game was also very popular in the United States and Europe, and it even became one of the best-selling video games of all time. The success of Tekken showed that global culture can have a significant impact on the way games are designed and marketed. In fact, the success of Tekken led to the development of other successful games such as Soul Calibur and Virtua Fighter. In time, it has seen that while we change gaming, "Gaming is changing us: our technology, our art, how we learn, and what we expect from the world" and a new generation of game developers and game players emerged (Copeland, 2000, p. 1).

To understand the change and to lighten the future of cultures, it is necessary to look closer at the world of technology. Because as Crogan and Kennedy (2009) explains:

> "Technology—not only the input and output machines, communication devices, and networks through which one plays games on computers, and the producing, recording, and storage apparatuses for making games (as cutting-edge audiovisual media), and the marketing and distribution systems through which they are disseminated but also the techniques of game design and play, of incorporating gameplay in the wider routines of living, of interpreting rules and exceptions,

genres and conventions of reception, of 'reading,' criticizing and enjoying games—
all lies between, and indeed constitutes the relation of games and culture" (p. 108).

Nevertheless, "many researchers regard the gaming culture as something distinct or separate from a constructed mainstream culture because of the tendency to focus on the entertainment medium niche" (Chen, 2013, p. 414). Games can be studied as cultural influencers, beyond studying as artifacts. King and Krzywinska (2006) also assert that ''If game playing has an array of niche cultures, and the broader subculture of self-identified 'gamers,' it has also established a place in the much wider landscape of popular culture and entertainment in recent decades'' (p. 222). "Defining gaming culture as something distinct and separate from a constructed mainstream culture encourages us to only study those who identify as gamers, rather than more dispersed gaming" (Shaw, 2010, p. 416). However, as much as we look at games as culture, we should also look at games in culture.

## 2.4 Measuring the Effects of Online Games on Cultural Values

The idea of "Cultural Studies" emerged as a result of the work of the Birmingham Centre for Contemporary Cultural Studies, which was founded in 1964 by Richard Hoggart, Stuart Hall, and others (Hall, 1990). Since then, it has been subsequently taken up and transformed by scholars from many different disciplines around the world. While some of the researchers such as Hall, Lewis, Fukuyama, Triandis deal with culture in single dimension, some others such as Hofstede, Hamden-Turner and Trompenaars deal with culture in multiple dimensions. On the other hand, some others such as Chen, Cragg deal as to the historical-social models. Figure 6 shows us an overview of these studies.
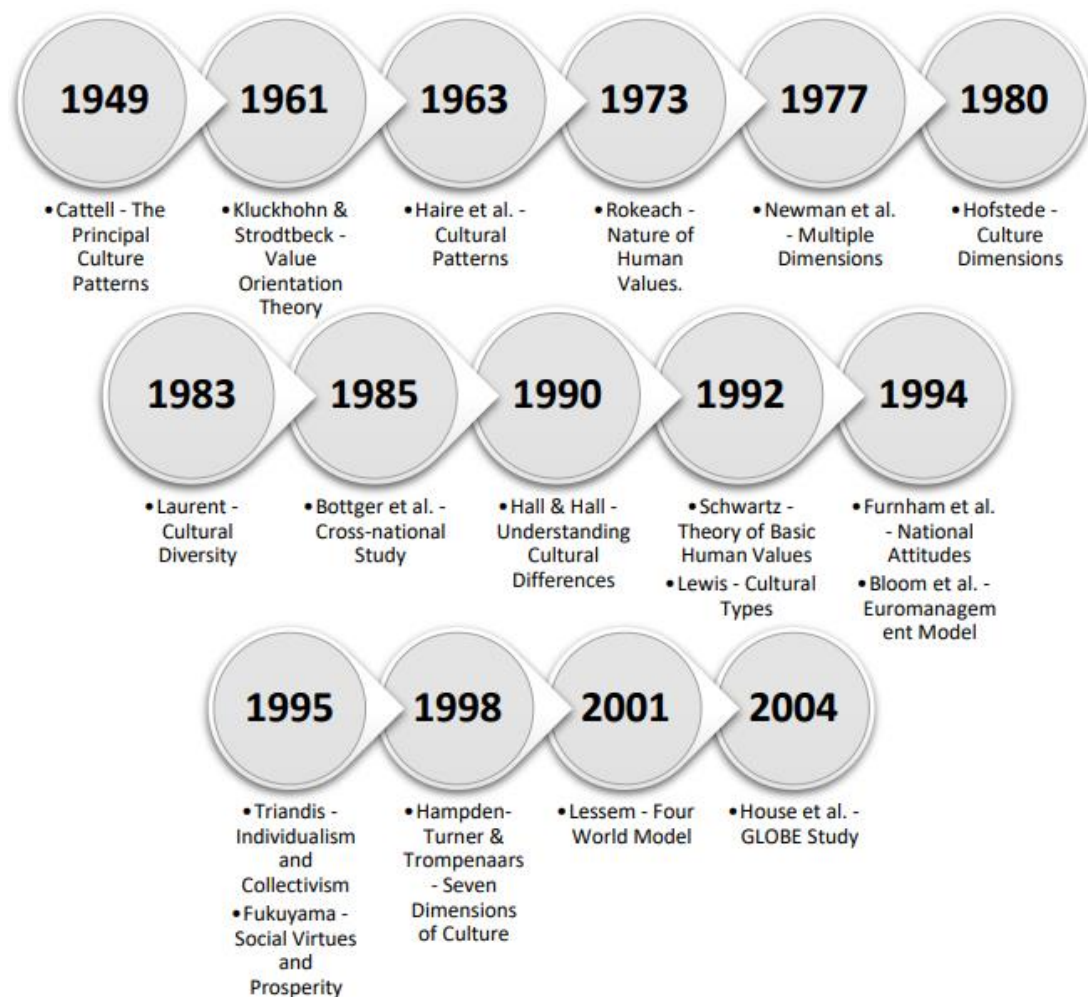
Figure 6: Timeline of Some Cultural Studies

Among them, the largest and most comprehensive one is the Hofstede's Cultural Dimensions model that has reached more than 116,000 people. Still, Hofstede's model of national culture stands out in terms of its sophistication and diversity of national cultural dimensions and it continues to be the most referenced study in fields such as psychology, sociology, marketing and management.

Hofstede, in his research, describes the four dimensions of culture that help explain how and why people from different cultures behave as they are (Hofstede, 1984). Fifth dimension was added to Hofstede's model "after Hofstede's original IBM research in an effort to capture dimensions that might be particularly relevant in Asia" (Newman

& Nollen 1996, p. 759). Thus, the model included power distance, uncertainty avoidance, collectivism, masculinity and (added) long term orientation dimensions.

Hofstede's model had been translated into many different languages and had been widely validated by hundreds of studies. However it was not appropriate for a study to examine the impact of an individual's cultural orientation. With the aim of responding to the call for developing a psychometrically sound measure of Hofstede's culture at the individual level, Hofstede's Individual Cultural Values Scale (CVSCALE) was developed by Yoo, Donthu and Lenartowicz (Yoo et al., 2011). CVSCALE is more useful to explore the effects of any specific phenomenon on each individual's own cultural orientations which may or may not reflect their national culture. Accordingly, in this study CVSCALE was used while measuring the effects of Online Games on Cultural Values in Turkey.

### 2.4.1 Hofstede's Individual Cultural Values Scale

In 2011, Yoo, Donthu and Lenartowicz (2011) reconsidered the five-dimensional scale of cultural values developed by Hofstede in order to identify cultural values at the individual level and developed CVSCALE (Yoo et al., 2011). They applied the scale to American undergraduate students representing Western culture and Korean undergraduate students representing Eastern culture. They conducted validity and reliability studies in order to ensure cross-cultural generalizability in the scale development process. As a result of the analyzes, the alpha coefficient of each dimension was .62 for the power distance; .71 for uncertainty avoidance; .76 for collectivism; .71 for short-long range and .68 for masculinity. Yoo, Donthu, and Lenartowicz (2011) found the total variance of the scale to be 44.5% in their analysis while Hofstede (2001) determined the total variance explained by the scale as 49%.

CVSCALE consists of 26 items in total: 5 for power distance, 5 for uncertainty avoidance, 6 for collectivism, 6 for short-termism, and 4 for masculinity. In addition, the scale uses 5-point Likert-type scales.

In this study, Turkish adaptation of CVSCALE was used. Ahmet Saylık adapted CVSCALE to Turkish in 2019. "Within the scope of the Turkish adaptation, study translation and back-translation technique was used." (Saylık, 2019, p. 1860). It was determined that the scale items have high level distinguishing characteristics and the scale protected its original 26-item structure. Five factors explained 57,53% of the total variance. Kaiser-Mayer-Olkin value of the scale was .816.

- **Power Distance (PO)**

Power distance is defined as "the extent to which the less powerful members of institutions and organizations within a country expect and accept that power is distributed unequally" (Hofstede, 2001, p. 98). This dimension expresses the attitude of culture towards these inequalities among us by dealing with the fact that not all individuals in societies are equal. High power distance makes individuals more accustomed to centralized and paternal leadership, while low power distance makes individuals more comfortable with a relatively equal distribution of power (Eylon & Au, 1999).

Table 3: Low vs. High Power Distance

| | |
|---|---|
| **Low PO** | Democracy, Equality, Narrow Salary Range, Even Income Distrubition, Decentralizatio, Informality, Consultation, Younger Executives |
| **Countries with Low PO** | Austria, Israel, Denmark, Germany, New Zealand, Ireland and the United States |
| **High PO** | Autocracy, Obedience, Wide Salary Range, Uneven Income Distrubition, Centralization, Formality, Direction, Older Executives |

| Countries with High PO | Malaysia, Panama, Guatemala, Mexico, Hindi, Hong Kong, France, Turkey, Philippines and Venezuela |
|---|---|

- **Uncertainty Avoidance (UN)**

"The extent to which the members of a culture feel threatened by ambiguous or unknown situations and have created beliefs and institutions that try to avoid these is reflected in the score on Uncertainty Avoidance" (Hofstede, 1997, p. 21). In other words, uncertainty avoidance refers to the extent to which people in a culture are nervous about situations they see as unstructured, uncertain or unpredictable, and to what extent they try to avoid such situations by adopting strict codes of conduct and beliefs (Stohl, 1993). Uncertainty causes anxiety, and different cultures have different ways of dealing with the anxiety that uncertainty brings.

Table 4: Low vs. High Uncertainty Avoidance

| Low UN | Low Stress, Facilitator Leader, Innovation and Achievement, Open-ended Learning |
|---|---|
| **Countries with Low UN** | Singapore, Denmark, Sweden, Hong Kong, England, America and Canada (Hofstede, 1997) |
| **High UN** | High Stress, Expert Leader, Precision and Security, Structured Learning |
| **Countries with High UN** | Turkey, Greece, Portugal, Belgium, Japan and France (Hofstede, 1997) |

- **Collectivism (CO)**

Collectivism is defined as "the degree to which individuals express pride, loyalty, and cohesiveness in their organizations or families" (House et al., 2004, p. 30). It refers to a society in which people are integrated into strong, cohesive in-groups. However, ties between individualistic cultures are loose and everyone is expected to care only for their immediate family.

Table 5: Low vs. High Collectivism

| | |
|---|---|
| **Low CO** | I, Independent, Competition, Self-respect, Guilt Feeling, Market Democracy |
| **Countries with Low CO** | America, Canada, Australia, Denmark, Sweden and England (Hofstede, 1997) |
| **High CO** | We, Interdependent, Harmony, In-group, Shame Feeling, Communalism |
| **Countries with High CO** | Guatemala, Pakistan, Panama and Venezuela (Hofstede, 1997) |

- **Long-Term Orientation (LT)**

"LTO is the cultural value of viewing time holistically, valuing both the past and the future rather than deeming actions important only for their effects in the here and now or the short term" (Bearden et al., 2006, p. 2). Countries that score high in LTO have hard work and determination for future benefits. There is a great respect for labor and most of the income goes to investments. In countries with a short-term approach, status does not have an important place in human relations. There is personal reliability and stability. Free time is important.

Table 6: Low vs. High Long Term Orientation

| | |
|---|---|
| **Low LT** | Analytical Thinking, Quick Results, Personal Stability, Social Spending and Consumption |
| **Countries with Low LT** | Pakistan, Nigeria, Philippines, and Canada (Hofstede, 1997) |
| **High LT** | Synthetic Thinking, Perseverance, Personal Adaptability, Large Savings and Investments |
| **Countries with High LT** | China, Hong Kong, Taiwan, Japan and South Korea (Hofstede, 1997) |

- **Masculinity (MA)**

According to Hofstede (1991), cultural masculinity characterizes societies in which men are expected to be dominant, assertive, tough and focused on material success, while women are expected to be dependent, humble, sensitive and concerned with life

quality. In high masculine cultures, society is driven by competition, success and achievement. However, in cultures of low masculinity, both men and women are expected to be dependent, humble, sensitive, and concerned with quality of life.

Table 7: Low vs. High Masculinity

| | |
|---|---|
| **Low MA** | Reationship Oriented, Negotiation, Experiences and People, Environment Protection, Fewer Work Hours |
| **Countries with Low MA** | Denmark, Finland, the Netherlands, Norway and Sweden (Hofstede, 1997) |
| **High MA** | Ego Oriented, Force, Money and Things, Economic Growth, Higher Pay |
| **Countries with High MA** | Japan, Austria, Venezuela, Switzerland, Mexico and Italy (Hofstede, 1997) |

## 2.5 Turkish Culture and Five Dimensions of Its Cultural Values

There are a lot of factors that can shape cultural values. These factors can be seen in the Cultural Wheel in Figure 4. When Turkish culture is examined from this point of view, Turkey represents transitional countries in which the modern and traditional worlds coexist due to its location astride two continents bestows a unique culture blending of Eastern and Western elements. Modern Western values and traditional Islamic values are everywhere in the whole country. In 1920s, Turkey became a secular republic. Cleveland et al. (2011) explain this situation as follows:

> "Although Turkey has a long history of diverse ethnic and religious groups living together, the modern Turkish republic (dominated by Turkish-Sunni groups) implemented an assimilation policy. In the constitution, all ethnic groups are Turks, with the suppression of different lifestyles, religions, and ideologies" (p. 941).

For this reason, Turkey still incorporates modern-individualist and traditional-collectivist value systems and is experiencing some social changes (Göregenli, 1997; Kuşdil & Kağitçibaşi, 2000). When we look at Hofstede's 5-dimensional model from the perspective of Turkey, we come across a table like in the Figure 7.

**THE 5 DIMENSIONS OF TURKISH CULTURE**

| | 85 | | | |
|---|---|---|---|---|
| 66 | | 63 | | |
| | | | 46 | 45 |
| PO | UN | CO | LO | MA |

| | |
|---|---|
| **Power Distance** | Turkey scores high on this dimension (score of 66) which means the following characterises: Dependent, hierarchical, superiors often inaccessible and the ideal boss is a father figure. Power is centralized and people expect to be told what to do. Communication is indirect and the information flow is selective. |
| **Uncertainty Avoidance** | Turkey scores 85 on this dimension and thus there is a huge need for laws and rules. In order to minimize anxiety, people make use of a lot of rituals. For foreigners they might seem religious, with the many references to "Allah", but often they are just traditional social patterns, used in specific situations to ease tension. |
| **Collectivism** | Turkey, with a score of 63 is a collectivistic society. This means that the "We" is important. The harmony of the group has to be maintained, open conflicts are avoided. The relationship has a moral base. Time must be invested initially to establish a relationship of trust. Nepotism may be found more often. |
| **Long Term Orientation** | Turkey's intermediate score of 46 is in the middle of the scale so no dominant cultural preference can be inferred. |
| **Masculinity** | Turkey scores 45 and is on the Feminine side of the scale. This means that the softer aspects of culture such as leveling with others, consensus, sympathy for the underdog are valued and encouraged. Conflicts are avoided and consensus at the end is important. Leisure time is important for Turks, it is the time when the whole family, clan and friends come together to enjoy life. |

*Adapted from Hofstede's Country Comparison (2022)

Figure 7: The 5 Dimensions of Turkish Culture

# Chapter 3

# METHODOLOGY

While giving the methodology of the prepared study, some definitions were made from time to time, in order from general to specific, so that the explanations to be made can be understood more clearly. E.G:

⊕ *Research design* is a framework or process of planning a study in order to collect data that will answer a research question.

## 3.1 Conceptual Design

⊕ *Conceptual design* is a model that provides an overview of what is proposed and tests the feasibility of the study.

⊕ Q*uantitative research* is a scientific investigation of phenomena that involves the collection and analysis of numerical data.

⊕ *Dependent variable* is the variable studied under the assumption that they depend on the values of other variables by some law or rule.

⊕ *Independent variable* is the variable that is examined alone because of being away from the effect of other factors.

⊕ *A moderating variable* is the third variable studied to understand its effect on the relationship between two other variables.

Due to the explanations made in the preceding sections, in this study, the effects of online games on culture were examined through the Turkish adaptation of Individual Cultural Values Scale (CVSCALE). Permission was not obtained to use the Turkish

adaptation of CVSCALE. Because the author states in his article that there is no need to get permission for the use of the scale (Saylık, 2019, p. 1881). To measure cultural values, a quantitative research design, specifically the survey method, was used, for data collection. While online games was chosen as an independent variable; power distance, uncertainty avoidance, collectivism, long-term orientation and masculinity were chosen as dependent variables. In previous researches studying Hofstede's model, it has seen that age and gender are influential on individuals' cultural orientations. Therefore, age and gender are added as moderator variables. Since people's cultural perspectives have changed over the years, playing history, measured by years, was also added to the model and the following model was deemed appropriate for this study:
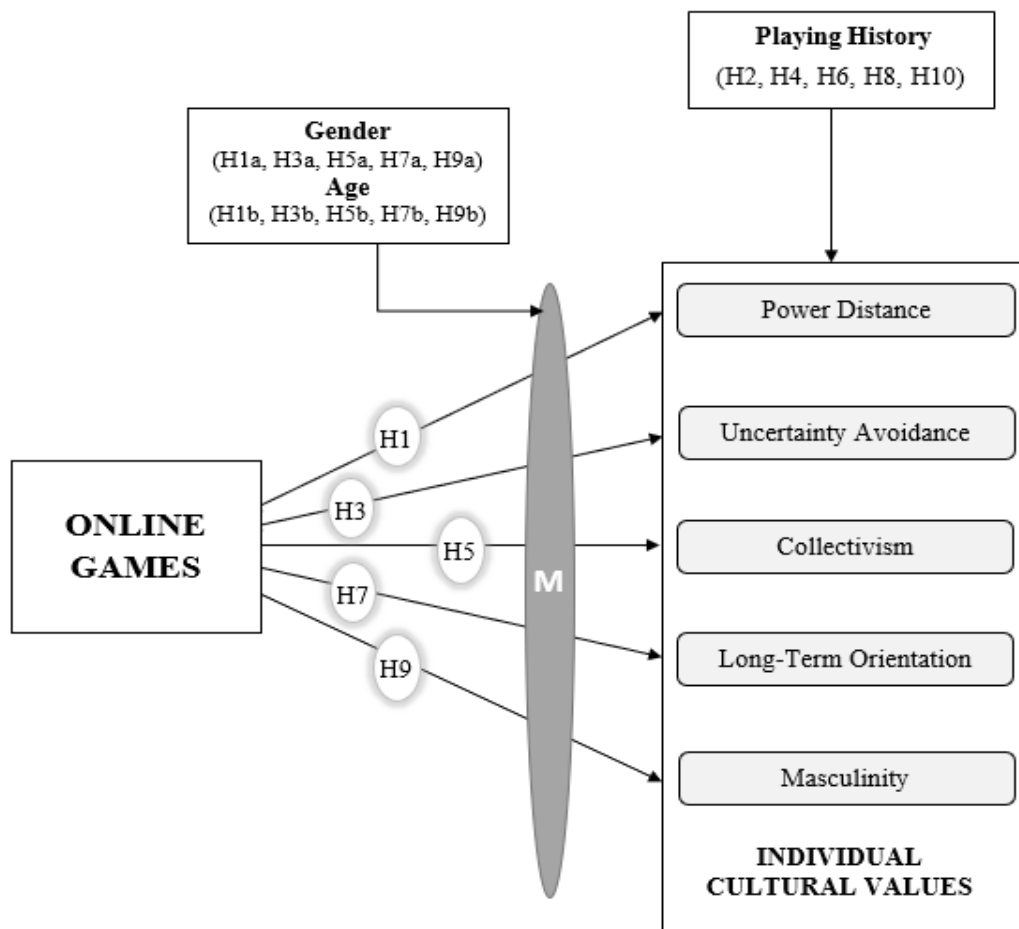


Figure 8: Conceptual Design and Hypotheses Framework

### 3.1.1 Statements of Hypotheses

⊕ *Hypothesis* is a proposition that is accepted, regardless of whether it is true or false, as a principle from which a given set of consequences can be deduced.

In this research, the effects of online games on cultural values as measured by Power Distance, Uncertainty Avoidance, Collectivism, Long-Term Orientation and Masculinity and the possible effects of age and gender on these relationships were investigated fundamentally. The effects of playing history on cultural values were examined additionally. First and second stages of the hypothesis were formed in this context.

Accordingly, the hypotheses are:

**H1** :Power Distance is significantly affected by Online Games.

**H1a** :Relationship between Online Games and Power Distance is moderated by Gender.

**H1b** :Relationship between Online Games and Power Distance is moderated by Age.

**H2** :Power Distance is significantly affected by Playing History.

**H3** :Uncertainty Avoidance is significantly affected by Online Games.

**H3a** :Relationship between Online Games and Uncertainty Avoidance is moderated by Gender.

**H3b** :Relationship between Online Games and Uncertainty Avoidance is moderated by Age.

**H4** :Uncertainty Avoidance is significantly affected by Playing History.

**H5** :Collectivism is significantly affected by Online Games.

**H5a**   :Relationship between Online Games and Collectivism is moderated by Gender.

**H5b**   :Relationship between Online Games and Collectivism is moderated by Age.

**H6**   :Collectivism is significantly affected by Playing History.

**H7**   :Long-Term Orientation is significantly affected by Online Games.

**H7a**   :Relationship between Online Games and Long-Term Orientation is moderated by Gender.

**H7b**   :Relationship between Online Games and Long-Term Orientation is moderated by Age.

**H8**   :Long-Term Orientation is significantly affected by Playing History.

**H9**   :Masculinity is significantly affected by Online Games.

**H9a**   :Relationship between Online Games and Masculinity is moderated by Gender.

**H9b**   :Relationship between Online Games and Masculinity is moderated by Age.

**H10**   :Masculinity is significantly affected by Playing History.

## 3.2 Sample Design

⊕ *Sampling Design* is a selection technique applied to select the most suitable sample from the whole population.

⊕ *Sample* is the representative group selected by considering its characteristics in order to obtain information about the population under study.

⊕ *Non-probability sampling* is a method in which all members of the population do not have an equal chance of being selected for the sample.

⊕ *Snowball sampling* is one of the non-probability sampling techniques in which the sample is formed by recruiting the social environment of the existing study subjects in the research.

While designing the most appropriate and the best sample, two criteria were chosen as a starter point:

1. The effects of online games should be investigated based on an existing culture.

2. It takes years for an individual or a community to experience a cultural change.

In order to provide the first criterion, this study focused on Turkish culture and gained information from Turkish online game players and their non-player relatives and friends.

In order to provide the second criterion, the way the participants acquired Turkish citizenship and their exposure to cultural change were evaluated. According to the Republic of Turkey Ministry of Interior Presidency of Migration Management, the acquisition of Turkish citizenship is regulated either by birth or later by acquisition (Acquisition of Turkish citizenship, n.d.). In this research, participants who are Turkish citizens by birth were seen more appropriate because it is based on kinship instead of birth place. However, this required examining Turks who were born abroad and took citizenship by birth. Therefore, the possibility of a significant difference in the answers of Turkish citizens who had continiously lived abroad for more than 1 year was analyzed and it was decided whether they would be included in the research or not.

When determining the sample size, the universe of the research was taken as the Turkish population. According to TUIK, the population of Turkey in 2021 was 84.680.273 (TUIK Kurumsal, n.d.). To be 95% confident that the true value of the estimate is within 5 percentage points of 0.5, the required sample size was expected to consist of minimum 384 people (Krejcie & Morgan, 1970). However, this number was exceeded in two weeks and 486 data were collected.

Snowball, non-probability sampling technique was used. In this method, existing study subjects recruit future subjects from among their acquaintances. Thus the sample group grows like a rolling snowball. Potential starter subjects consisted of 5 twitch broadcasters who had played online games in their broadcasts and they were asked to recruit their relatives and friends whether they played online games or not. Normally, those online game players are expected to show similar cultural characteristics with their non-player relatives and friends. In this study, this opinion and the potential changes in the cultural values of the players will be investigated.

## 3.3 Questionnaire Design

The survey design includes some stages as in the Table 8. In this research, these steps were carried out as a priority and then the questionnaire was applied.

Table 8: Questionnaire Design

| Step 1: | Decide the information required. |
|---------|----------------------------------|
| Step 2: | Define the target respondents. |
| Step 3: | Choose the method(s) of reaching your target respondents. |
| Step 4: | Decide on question content. |
| Step 5: | Develop the question wording. |
| Step 6: | Put questions into a meaningful order and format. |
| Step 7: | Check the length of the questionnaire. |
| Step 8: | Pre-test(Piloting) the questionnaire. |
| Step 9: | Develop the final survey form. |

Since the data about Turkish culture were collected from Turks, the questionnaire was applied in Turkish. At the beginning of the survey, general informations about the research and the researchers were given to the participants in the intro section. Then, the questionnaire was divided into two sections: Demographic Information and

Cultural Information. The terms to be used to measure the individual cultural values of the participants were taken from the Turkish version of CVSCALE.

### 3.3.1 Questionnaires Structure

The questionnaires comprise 32 questions. While 6 of them include demographic questions, 26 of them include cultural questions.

Table 9: Demographic Information Section

| DEMOGRAPHIC QUESTIONS | | | | |
|---|---|---|---|---|
| **1. Gender** | Female | | Male | Other |
| **2. Age** | Under 18 | 18-29 | 30-39 | 40-49 | 50 and over |
| **3. Citizenship by Birth** (Are you a turkish citizen by birth?) | Yes | | | No |
| **4. Cultural Effect** (Have you ever continuously stayed out of turkey for more than one year?) | Yes | | | No |
| **5. Online Gaming Behavior** (Do you play online games?) | Yes | | | No |
| **6. Playing History** (How long have you been playing online games?) | Less than 5 years | 5 to 10 years | 11 to 15 years | More than 15 years |

In the demographic information section, 4th question "Have you ever continuously stayed out of Turkey for more than one year?" was only open to the participants who answered 'YES' to the 3th question "Are you a Turkish citizen by birth?" and 6th question in the demographic information part "How long have you been playing online games?" was only open to the participants who answered 'YES' to the 5th question "Do you play online games regularly?"

Table 10: Cultural Information Section

| CULTURAL QUESTIONS | |
|---|---|
| **PO** | 1, 2, 3, 4, 5 |
| **UN** | 6, 7, 8, 9, 10 |
| **CO** | 11, 12, 13, 14, 15, 16 |
| **LT** | 17, 18, 19, 20, 21, 22 |
| **MA** | 23, 24, 25, 26 |

In the cultural information section, it was researched to find out what the cultural values of the respondents were. The interrogations were put on a five point Likert scale and the responses ranged likewise "Strongly Agree=1" right up to "Strongly Disagree=5". These questions were used from the Turkish adaptation of CVSCALE (Saylık, 2019).

## 3.4 Data Collection

Accurate data collection is vital to any research. In this research, quantitative methods were used to extract the data. Online-based questionnaires were employed by distributing the survey URL(web link) prepared on google forms. Since the snowball method was used in the research, the link were initially sent to the determined Twitch broadcasters. Then, by sharing the link with their friends and relatives, determined sample size was reached. One of the biggest challenges encountered in collecting data was to make it understandable that people who were not playing online games could also answer the survey and to show that the participants could invite their relatives to participate in the survey. To resolve such situations, these were clearly explained at the intro part of the questionnaire.

### 3.4.1 Ethics in Data Collection

It is important to pay attention to ethical issues in the data collection process. Some ethical issues to consider when collecting data include:

- Informed consent: ensuring that participants understand what they are agreeing to and are able to give their consent freely.

- Confidentiality: ensuring that participants' information is kept confidential and is not shared without their permission.

- Privacy: ensuring that participants' information is not used in a way that violates their privacy.

- Data security: ensuring that participants' information is stored securely and is not accessed by unauthorized individuals.

The questions prepared according to the research problem and the purpose of the research were clearly explained in the intro part of the questionnaire. The researcher in no way forced the participants to participate in the research. It was promised that the identities of the participants would be kept confidential and would not be disclosed. In addition, databases were not used in transforming data into information in order to reach definitive results. All ethical considerations were taken into account in this study.

# Chapter 4

# DATA ANALYSIS AND INTERPRETATION

This chapter focuses on the analysis of data collected from the questionnaires. SPSS 25.0 software, SPSS Amos and PROCESS macro version 4 were used for data analysis.

## 4.1 Evaluation of the Participants

It was recorded that 486 participants completed the questionnaire. 21 of them were initially eliminated because they stated that they were not Turkish citizens by birth. Thus, 465 results left.

Later, it was seemed that 35 participants answered 'Yes' to "Have you ever continuously stayed out of Turkey for more than one year?" in question 4 of the questionnaire. In order to calculate the probability of a significant difference in the cultural values of people living outside of Turkey for more than 1 year compared to the other participants and learn whether this 35 respondents would be included in the study or not, the Mann-Whitney U test in Table 12 was applied to remaining 465 results after achieving the normality test results in Table 11.

Table 11: Normality Test Results of Cultural Effect and Cultural Values

| Variable | | Have you ever continuously stayed out of Turkey for more than one year? | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Mean | Min | Max | Sk | Ku | $P^{K-S}$ | $P^{S-W}$ | $P^{K-S}$ | $P^{S-W}$ |
| PO | Yes | 2.21 | 1.96 | 2.46 | .477 | -.496 | .200* | .095 | .000 | .000 |
| | No | 2.25 | 2.18 | 2.32 | .510 | .003 | .000 | .000 | | |
| UN | Yes | 4.16 | 3.96 | 4.35 | -.416 | -.994 | .157 | .008 | .000 | .000 |
| | No | 4.13 | 4.07 | 4.18 | -.475 | -.208 | .000 | .000 | | |
| CO | Yes | 3.85 | 3.59 | 4.10 | .139 | -1.372 | .025 | .016 | .000 | .000 |
| | No | 3.57 | 3.49 | 3.65 | -.553 | .192 | .000 | .000 | | |
| LT | Yes | 4.34 | 4.18 | 4.50 | -.690 | .129 | .007 | .048 | .000 | .000 |
| | No | 4.29 | 4.25 | 4.34 | -.707 | .202 | .000 | .000 | | |
| MA | Yes | 2.52 | 2.09 | 2.94 | .516 | -.690 | .091 | .009 | .000 | .000 |
| | No | 2.94 | 2.84 | 3.04 | .097 | -.738 | .000 | .000 | | |

\* When the 'Yes' and 'No' answers to the question "Have you ever continuously stayed out of Turkey for more than one year?" are analyzed separately, although some of the the "kolmogorov smirnov" and "shapiro wilk" test results are higher than .50, the Mann-Whitney U test, which is one of the non-parametric tests, is applied because the normal distribution does not appear in the general analysis results.

Table 12: Mann-Whitney U Test Results of Cultural Effect and Cultural Values

| | Have you ever continuously stayed out of Turkey for more than one year? | n | X | Median | Mean Rank | Mann-Whitney U | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | U | Z | p |
| PO | Yes | 35 | 2.21 | 2.20 | 224.11 | 7214 | -0.40 | .683 |
| | No | 430 | 2.25 | 2.20 | 233.72 | | | |
| UN | Yes | 35 | 4.16 | 4.20 | 238.54 | 7331 | -0.25 | .799 |
| | No | 430 | 4.13 | 4.20 | 232.55 | | | |
| CO | Yes | 35 | 3.85 | 4.00 | 265.87 | 6374.5 | -1.50 | .131 |
| | No | 430 | 3.57 | 3.66 | 230.32 | | | |
| LT | Yes | 35 | 4.34 | 4.33 | 242.07 | 7207.5 | -0.41 | .676 |
| | No | 430 | 4.29 | 4.33 | 232.26 | | | |
| MA | Yes | 35 | 2.52 | 2.25 | 183.21 | 5782.5 | -2.28 | .022 |
| | No | 430 | 2.94 | 3.00 | 237.05 | | | |

SPSS doesn't provide an effect size statistic, therefore an approximate value of r is calculated with this formula: $\mathbf{r = Z/\sqrt{N}}$

Mann-Whitney U Test reveales that while there is no significant difference (P>.05) in PO, UN, CO and LT of Turkish citizens living and not living abroad for more than 1 year, MA scores of the citizens who have lived abroad for more than 1 year (Md= 2.25, n= 35) are significantly lower than the MA scores of the citizens who have not lived abroad for more than 1 year (Md= 3.00, n= 430), U= 5782.50, z= -2.28, p=.022, r= -0.10. According to Cohen (1998) criteria there is a small effect size. This finding shows that living abroad and exposure to foreign cultures for more than 1 year can effect people's masculinity perception. Therefore, it was decided to include these 35 participants in the analyzes to be made, but to examine the hypothesis containing MA by considering two different possibilities.

## 4.2 Descriptive Analysis

A descriptive statistical method was used to explore the important variables of this research.

### 4.2.1 Gender Distribution

124 respondents (27%) are female and 341 respondents (73%) are male in this research. These percentages are similar to the other researches on digital games and show that men tend to play games more than women.
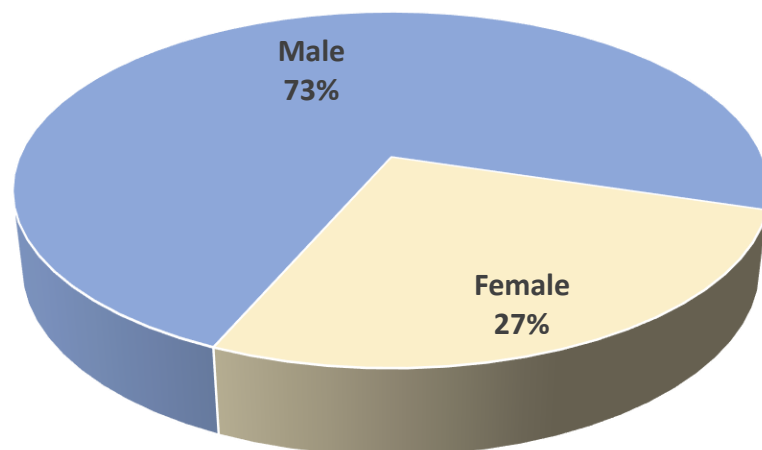


Figure 9: Pie Chart for Gender

Table 13: Gender

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| | Female | 124 | 26.7 | 26.7 | 26.7 |
| Valid | Male | 341 | 73.3 | 73.3 | 100.0 |
| | Total | 465 | 100.0 | 100.0 | |

**4.2.2 Age Distribution**

Nearly 75% of twitch viewers are between the ages of 16 and 34 (Twitch.Tv, n.d.). Considering that the starting point of the snowball method used in the study was chosen as twitch broadcasters, the age-related distribution of the participants in this study is consistent with this information. 113 respondents (24%) are under the age of 18, 240 respondents (51%) are between 18 and 29 years old, 68 respondents (15%) are between 30 and 39 years old, and 28 respondents (6%) are between 40 to 49 years. The remaining 18 respondents (4%) are 50 years or over.



Figure 10: Pie Chart for Age

Table 14: Age

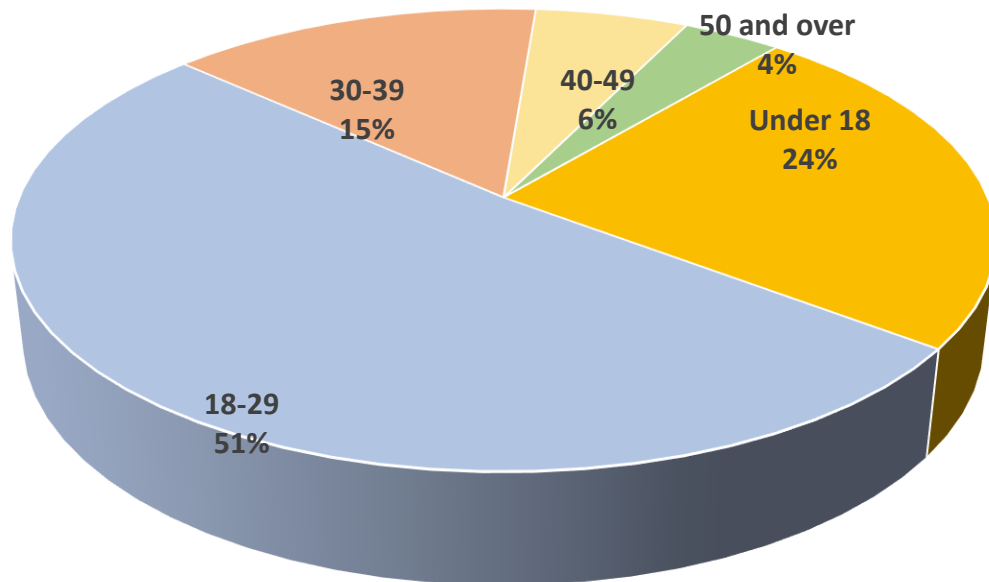| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Under 18 | 113 | 24.3 | 24.3 | 24.3 |
| | 18-29 | 239 | 51.4 | 51.4 | 75.7 |
| | 30-39 | 68 | 14.6 | 14.6 | 90.3 |
| | 40-49 | 27 | 5.8 | 5.8 | 96.1 |
| | 50 and over | 18 | 3.9 | 3.9 | 100.0 |
| | Total | 465 | 100.0 | 100.0 | |

**4.2.3 Online Gaming Distribution**

While conducting research for this study, there had found no data showing the exact number of online game players in Turkey. However, it was found that according to the 2020 Newzoo Global Gaming Market Report, while the world population was 7.79 billion in 2020, there were 2.69 billion online game players in the world (Newzoo, 2021). This brings us to the fact that 34.5% of the world's population had played online games in 2020. When this information is evaluated with the deductive reasoning method, it can be expected that 34.5% of the population in Turkey had played online games in 2020. However, based on the chart, 385 respondents (82%) are playing online games regularly in 2022, while 82 respondents (18%) are not playing online games regularly. The reason for this difference may be the increased interest in online games or the use of snowball method in the research.
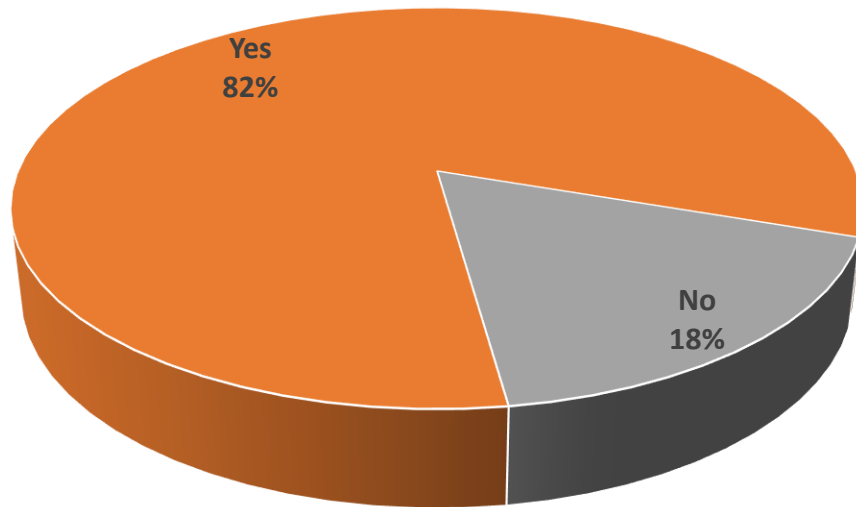
Figure 11: Pie Chart for Online Gaming

Table 15: Online Gaming

|  |  | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Yes | 384 | 82.6 | 82.6 | 82.6 |
|  | No | 81 | 17.4 | 17.4 | 100.0 |
|  | Total | 465 | 100.0 | 100.0 |  |

**4.2.4 Playing History Distribution**

Although the first online game was Maze War created with the invention of the internet in 1974 by Steve Colley, online games became widespread in the 2000s with the increasing usage of computers at home and the cheapening of internet, and became indispensable for the gaming industry in the 2010s with the spread of smart phones. Therefore, playing history distribution can be expected to be higher for these periods. Indeed, the results confirm this. Based on the findings, 82 respondents (18%) never played online games, 76 respondents (16%) started 0-5 years ago, 169 respondents (36%) started 5-10 years ago, 83 respondents (18%) started 11-15 years ago and 57 respondents (12%) started more than 15 years ago.

How long have you been playing online games?
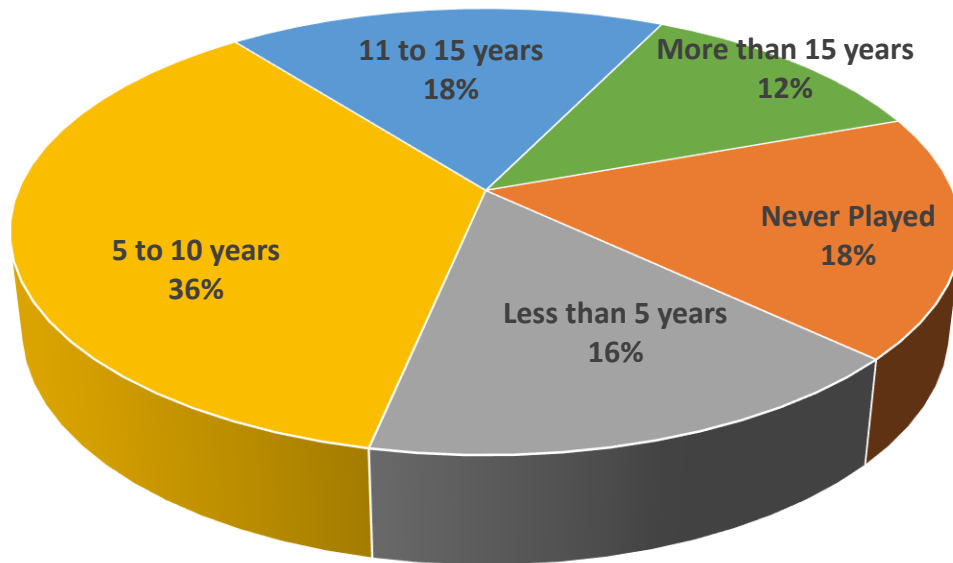


Figure 12: Pie Chart for Playing History

Table 16: Playing History

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Never Payed | 81 | 17.4 | 17.4 | 17.4 |
| | Less than 5 years | 75 | 16.1 | 16.1 | 33.5 |
| | 5 to 10 years | 169 | 36.3 | 36.3 | 69.9 |
| | 11 to 15 years | 83 | 17.8 | 17.8 | 87.7 |
| | More than 15 years | 57 | 12.3 | 12.3 | 100.0 |
| | Total | 465 | 100.0 | 100.0 | |

## 4.3 Mann-Whitney U Test for Gender Comparison

Mann-Whitney U test is used to test the differences between two medians of two independent samples and whether this difference is significant or not. There are 3 prerequisites for this test to be feasible.

1. Two independent groups have to be compared.

2. The dependent variable have to be ordinal or non-normal continuous data.

3. The dependent variable have not to be normally distributed.

Although 3 different answers (1=Female, 2=Male, 3=Other) were given to the gender question in the survey, nobody chose 'other' option. Therefore, first prerequisite is met. Second prerequisite is also met, because dependent variables is Likert type. The following table shows that the third prerequisite is also met.

Table 17: Normality Test Results of Gender and Cultural Values

| | GENDER | Mean | Min | Max | Sk | Ku | $P^{K-S}$ | $P^{S-W}$ |
|---|---|---|---|---|---|---|---|---|
| PO | Female | 1.95 | 1.85 | 2.06 | .745 | -.064 | .000 | .000 |
| | Male | 2.36 | 2.28 | 2.43 | .377 | -.053 | .000 | .000 |
| UN | Female | 4.07 | 3.97 | 4.16 | -.325 | .253 | .000 | .000 |
| | Male | 4.15 | 4.08 | 4.22 | -.534 | -.340 | .000 | .000 |
| CO | Female | 3.50 | 3.36 | 3.65 | -.458 | .046 | .065 | .032 |
| | Male | 3.63 | 3.54 | 3.72 | -.566 | .272 | .000 | .000 |
| LT | Female | 4.33 | 4.26 | 4.41 | -.675 | .131 | .000 | .000 |
| | Male | 4.28 | 4.23 | 4.34 | -.683 | .092 | .000 | .000 |
| MA | Female | 2.31 | 2.14 | 2.49 | .641 | -.012 | .006 | .000 |
| | Male | 3.13 | 3.02 | 3.23 | -.010 | -.704 | .002 | .000 |

* Although it is seen in the "kolmogrov smirnov" test result of the female CO score is higher than .50, the distribution is not considered normal and the Mann-Whitney U test, which is one of the non-parametric tests, is applied.

Table 18: Mann-Whitney U Test Results of Gender and Cultural Values

| | GENDER | n | X | Median | Mean Rank | Mann-Whitney U | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | U | Z | p |
| PO | Female | 124 | 1.95 | 1.80 | 175.85 | 14056 | -5.55 | .000 |
| | Male | 341 | 2.36 | 2.40 | 253.78 | | | |
| UN | Female | 124 | 4.07 | 4.00 | 214.74 | 18877.5 | -1.77 | .075 |
| | Male | 341 | 4.15 | 4.20 | 239.64 | | | |
| CO | Female | 124 | 3.50 | 3.58 | 217.49 | 19218.5 | -1.50 | .132 |
| | Male | 341 | 3.63 | 3.66 | 238.64 | | | |
| LT | Female | 124 | 4.33 | 4.33 | 239.06 | 20391 | -0.59 | .555 |
| | Male | 341 | 4.28 | 4.33 | 230.80 | | | |
| MA | Female | 124 | 2.31 | 2.25 | 157.12 | 11732.5 | -7.36 | .000 |
| | Male | 341 | 3.13 | 3.25 | 260.59 | | | |

SPSS doesn't provide an effect size statistic, therefore an approximate value of r is calculated with this formula: $r = Z/\sqrt{N}$

The Mann-Whitney U Test reveales that while there is no significant difference (P>.05) in UN, CO and LT values between female and male, there are significant differences (P>.05) in PO and MA values.

⇒ PO score of female participants (Md= 1.80, n= 124) is significantly lower than the PO score of male participants (Md= 2.40, n= 341), U= 14056, z= -5.55, p=.000, r= -0.25. According to Cohen (1998) criteria there is a small effect size. It shows that women are less affected by power distance than men. It means, power is affecting men more.

⇒ MA score of female participants (Md= 2.25, n= 124) is significantly lower than PO score of the male participants (Md= 3.25, n= 341), U= 11732.50, z= -7.36, p=.000, r= -0.34. According to Cohen (1998) criteria there is a medium effect size. Being a man and gender is more important for men than for women.

## 4.4 Kruskal-Wallis Test for Age Comparison

In many research conditions, it is wanted to compare the scores of more than two groups. In this case, ANOVA or the Kruskal Wallis test is used. However, the Kruskal Wallis test is only used when ANOVA is not applicable. There are 3 prerequisites have to be taken into consideration to apply the Kruskal Wallis test:

1. Three or more groups have to be compared.
2. The dependent variable have to be at least at the ordinal measurement level.
3. The dependent variable have not to be distributed normally.

Table 19: Normality Test Results of Age and Cultural Values

|  | AGE | Mean | Min | Max | Sk | Ku | $P^{K-S}$ | $P^{S-W}$ |
|---|---|---|---|---|---|---|---|---|
| PO | Under 18 | 1.27 | 2.13 | 2.40 | .758 | 1.083 | .014 | .001 |
|  | 18-29 | 2.28 | 2.19 | 2.37 | .282 | -.415 | .000 | .001 |
|  | 30-39 | 2.27 | 2.08 | 2.46 | .579 | -.368 | .000 | .006 |
|  | 40-49 | 1.93 | 1.69 | 2.17 | 1.028 | -.070 | .000 | .001 |
|  | 50 and over | 2.07 | 1.79 | 2.36 | .531 | -1.506 | .007 | .004 |
| UN | Under 18 | 4.04 | 3.92 | 4.17 | -.424 | -.791 | .001 | .000 |
|  | 18-29 | 4.14 | 4.07 | 4.22 | -.562 | -.131 | .000 | .000 |
|  | 30-39 | 4.24 | 4.10 | 4.37 | -.330 | -.339 | .011 | .002 |
|  | 40-49 | 4.14 | 3.98 | 4.31 | 1.334 | .526 | .000 | .000 |
|  | 50 and over | 4.05 | 3.83 | 4.27 | .734 | .698 | .001 | .012 |
| CO | Under 18 | 3.67 | 3.51 | 3.83 | -.610 | -.098 | .001 | .002 |
|  | 18-29 | 3.59 | 3.49 | 3.70 | -.573 | .378 | .000 | .000 |
|  | 30-39 | 3.56 | 3.38 | 3.75 | -.204 | .161 | .172 | .070 |
|  | 40-49 | 3.29 | 2.94 | 3.64 | -.659 | .684 | .200* | .339 |
|  | 50 and over | 3.75 | 3.31 | 4.18 | -.450 | -.112 | .200* | .577 |
| LT | Under 18 | 4.30 | 4.20 | 4.39 | -.835 | .659 | .000 | .000 |
|  | 18-29 | 4.22 | 4.15 | 4.28 | -.584 | -.116 | .000 | .000 |
|  | 30-39 | 4.43 | 4.32 | 4.55 | -.511 | -.764 | .003 | .000 |
|  | 40-49 | 4.58 | 4.48 | 4.68 | .035 | .146 | .000 | .008 |
|  | 50 and over | 4.46 | 4.31 | 4.61 | .304 | -.715 | .021 | .192 |
| MA | Under 18 | 3.25 | 3.06 | 3.45 | -.196 | -.783 | .008 | .008 |
|  | 18-29 | 2.78 | 2.65 | 2.91 | .244 | -.581 | .024 | .000 |
|  | 30-39 | 2.74 | 2.49 | 2.99 | .122 | -.767 | .200* | .071 |
|  | 40-49 | 3.10 | 2.63 | 3.56 | .105 | -.922 | .200* | .310 |
|  | 50 and over | 2.86 | 2.34 | 3.37 | .054 | -.172 | .200* | .900 |

* Although it is seen in some of the "kolmogrov smirnov" and "shapiro wilk" test results that there is a normal distribution, the distribution is accepted as not normal since most of the groups do not show a normal distribution and the Kruskal Wallis test was applied.

Table 20: Kruskal-Wallis Test Results of Age and Cultural Values

| *<.05 | AGE | N | Mean Rank | Sd | $X^2$ | P | Variance |
|---|---|---|---|---|---|---|---|
| PO | 1) Under 18 | 113 | 235.62 | 4 | 8.124 | .087 | - |
|  | 2) 18-29 | 239 | 241.24 |  |  |  | - |
|  | 3) 30-39 | 68 | 233.40 |  |  |  | - |
|  | 4) 40-49 | 27 | 168.85 |  |  |  | - |
|  | 5) 50 and over | 18 | 201.86 |  |  |  | - |

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| | | | | | | | |
|---|---|---|---|---|---|---|---|
| UN | 1) Under 18 | 113 | 219.02 | 4 | 4.407 | .354 | - |
| | 2) 18-29 | 239 | 237.23 | | | | - |
| | 3) 30-39 | 68 | 254.10 | | | | - |
| | 4) 40-49 | 27 | 222.56 | | | | - |
| | 5) 50 and over | 18 | 200.47 | | | | - |
| CO | 1) Under 18 | 113 | 247.01 | 4 | 5.571 | .234 | - |
| | 2) 18-29 | 239 | 233.01 | | | | - |
| | 3) 30-39 | 68 | 221.51 | | | | - |
| | 4) 40-49 | 27 | 186.69 | | | | - |
| | 5) 50 and over | 18 | 257.81 | | | | - |
| LT | 1) Under 18 | 113 | 233.14 | 4 | 22.483 | .000 | 4 |
| | 2) 18-29 | 239 | 210.87 | | | | 3, 4 |
| | 3) 30-39 | 68 | 269.68 | | | | 2 |
| | 4) 40-49 | 27 | 312.37 | | | | 1, 2 |
| | 5) 50 and over | 18 | 268.39 | | | | - |
| MA | 1) Under 18 | 113 | 277.14 | 4 | 18.267 | .001 | 2, 3 |
| | 2) 18-29 | 239 | 215.91 | | | | 1 |
| | 3) 30-39 | 68 | 213.11 | | | | 1 |
| | 4) 40-49 | 27 | 253.07 | | | | - |
| | 5) 50 and over | 18 | 227.86 | | | | - |

According to Kruskal Wallis test results presented in Table 20, there are significant differences in the LT($X^2_{(4)}$= 22.483; p<.05) and MA($X^2_{(4)}$= 18.267; p<.05). Therefore, Man Whitney U test was applied for the LT and MA groups one by one.

LT

MA

The difference can be seen between the age cohort of under 18 and 40-49, 18-29 and 30-39, 18-29 and 40-49.

The difference can be seen between the age cohort of under 18 and 18-29, under 18 and 30-39.

⇒ LT score of the participants under 18 is more negative than the LT score of the participants aged 40-49 and LT score of the participants aged 18-29 is more negative than the LT score of the participants aged 30-39 and 40-49. These show that in Turkey young people, which can be called as the generation Y and Z, do not make long-term planning and do not live their lives according to long-term goals when it is compared with the elderly people, which can be called as the generation X.

⇒ MA score of the participants under 18 is more positive than the MA score of the participants aged 18-29(p=0.004) and 30-39 (p=0.039). It shows that Turkish society has become more and more masculine. It means that people will become more assertive and focused on materialistic achievements in the future.

## 4.5 Reliability Analysis

Cronbach's alpha coefficient is commonly used in the calculation of internal consistency. Alpha is specified as a digit between 0 and 1 (Tavakol & Dennick, 2011). The higher the Cronbach Alpha coefficient in a scale, the higher the items in the scale consist of consistent items.

Table 21: Cronbach's Alpha Level of Reliability

| Cronbach's Alpha Score | Level of Reliability |
|:---:|:---:|
| 0.0 – 0.20 | Less Reliable |
| >0.20 – 0.40 | Rather Reliable |
| >0.40 – 0.60 | Quite Reliable |
| >0.60 – 0.80 | Reliable |
| >0.80 – 1.00 | Very Reliable |

*Source: (Hair et al., 2010)

Table 22: Reliability Test Results of CVSCALE

| Reliability Statistics | | | | |
|---|---|---|---|---|
| Factor | N of Items | Variance | Std Deviation | Cronbach's Alpha |
| PO | 5 | 12.60 | 3.54 | .588 |
| UN | 5 | 9.01 | 3.00 | .735 |
| CO | 6 | 25.21 | 5.02 | .813 |
| LT | 6 | 8.77 | 2.96 | .627 |
| MA | 4 | 18.07 | 4.25 | .750 |
| **TOTAL** | **26** | **115.21** | **10.73** | **.764** |

According to the Table 22, the Cronbach Alpha scores are 0.58, 0.73, 0.81, 0.62 and 0.75 respectively. Although Alpha value of PO seems low in this study, this value was found to be .63 in the Turkish adaptation of the scale. Therefore, after seeing that there would be no change if any item deleted, it was deemed appropriate to evaluate the total Cronbach Alpha coefficients which is 0.76 and the study was found to be reliable.

## 4.6 Confirmatory Factor Analysis

Confirmatory Factor Analysis (CFA) is performed to evaluate the matching of the measurement model and to examine the model fitness. Therefore, CFA was performed on the applied CVSCALE to test its model and its suitability by using AMOS 22 software. CFA results and accceptable ranges for CFA were given in Table 23.

Table 23: Fitness Indicators of CFA Model

| Fit Measures | Perfect Fit | Acceptable Fit | Value | Information |
|---|---|---|---|---|
| P | $.05 < p \leq 1.00$ | $.01 \leq p \leq .05$ | .000 | - |
| CMIN/DF | $1 \leq CMIN \leq 2$ | $2 \leq CMIN \leq 3$ | 1.919 | Perfect Fit |
| GFI | $.91 \leq GFI \leq 1.00$ | $.85 \leq GFI < .90$ | .919 | Perfect Fit |
| AGFI | $.90 \leq AGFI \leq 1.00$ | $.85 \leq AGFI < .90$ | .901 | Perfect Fit |
| CFI | $.96 \leq CFI \leq 1.00$ | $.90 \leq CFI < .95$ | .899 | Acceptable Fit |
| RMSEA | $0 \leq RMSEA \leq .05$ | $.05 < RMSEA \leq .08$ | .044 | Perfect Fit |

*Source: (Bentler, 1980; Bentler & Bonett, 1980; Brown & Cudeck, 1992; Byrne & Campbell, 1999; Schermelleh-Engel et al., 2003)

No item was dropped during CFA analysis to be able to preserve the orijinality of the scale. However, while applying the CFA three modifications were made between 11<sup>th</sup> item "Individuals should sacrifice self-interest for the group" and 12<sup>th</sup> item "Individuals should stick with the group even through difficulties" of Collectivism (CO); between 21<sup>th</sup> item "Giving up today's fun for success in the future" and 22<sup>th</sup> item "Working hard for success in the future" of Long Term Orientation (LTO) and between 23<sup>rd</sup> item "It is more important for men to have a professional career than it is for women" and 26<sup>th</sup> item "There are some jobs that a man can always do better than a woman" of Masculinity (MA). It was determined that these modifications contributed significantly to the fitness of the model. Figure 11 and the information given in the Table 23 show that the model is appropriate and the correlation between the items is at a perfect level.
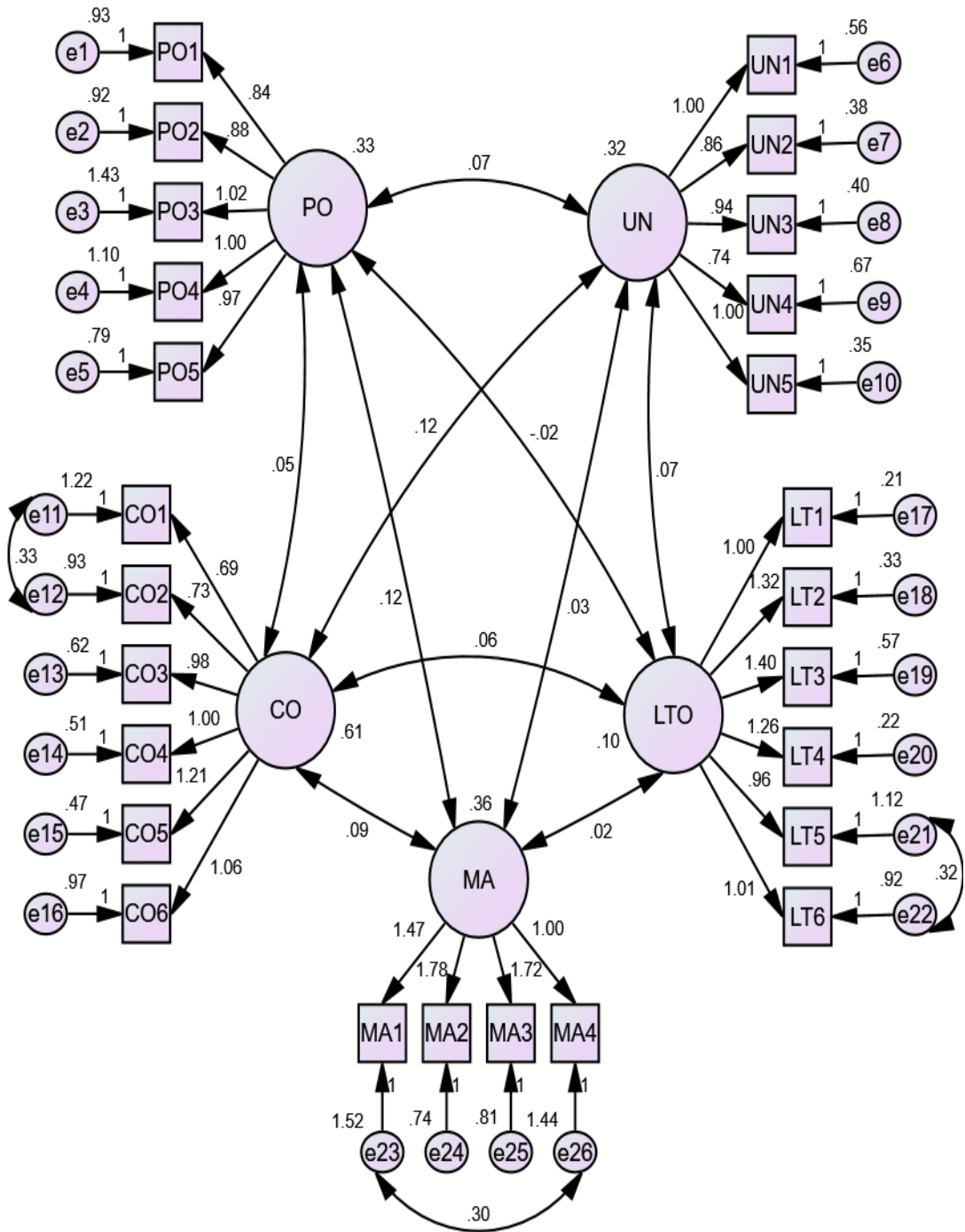
Figure 13: Confirmatory Factor Analysis

## 4.7 Correlation Analysis

The direction and intensity of the linear relationship between the two variables are examined using Pearson, Spearman or Kendall's tau-b correlation tests. In this study, Spearman Correlation test was used because variables were equally spaced or equally proportional and didn't show normal distribution. Spearman correlation coefficient is a value between -1 and +1. Negative correlation indicates that when one variable increases, the other decreases, while positive correlation indicates that when one variable increases, the other also increases. A correlation of 1 or -1 indicates a perfect linear relationship between two variables and 0 indicates no correlation.

Table 24: Description Of The Correlation

| Size of Correlation | | Level of Correlation |
|---|---|---|
| 1.0 | -1.0 | Perfect Correlation |
| .91 to .99 | -.91 to -.99 | Very Strong Correlation |
| .71 to .90 | -.71 to -.90 | Strong Correlation |
| .41 to .70 | -.41 to -.70 | Moderate Correlation |
| .21 to .40 | -.21 to -.40 | Week Correlation |
| .01 to .20 | -.01 to -.20 | Negligible Correlation |
| 0 | | No Correlation |

\* Adopted from (Hair et al., 2007)

Table 25: Spearman Correlation Matrix

| | Do you play online games regularly? | | PO | UN | CO | LT | MA |
|---|---|---|---|---|---|---|---|
| PO | Yes | Spearman r | 1.000 | .120* | .013 | -.017 | .244** |
| | | P | | . | .019 | .794 | .737 | .000 |
| | | N | 384 | 384 | 384 | 384 | 384 |
| | No | Spearman r | 1.000 | .061 | .265* | -.037 | .220* |
| | | P | | . | .587 | .017 | .745 | .048 |
| | | N | 81 | 81 | 81 | 81 | 81 |
| UN | Yes | Spearman r | .120* | 1.000 | .265** | .290** | .091 |
| | | P | .019 | . | .000 | .000 | .075 |
| | | N | 384 | 384 | 384 | 384 | 384 |
| | No | Spearman r | .061 | 1.000 | -.069 | .086 | .021 |
| | | P | .587 | . | .538 | .444 | .853 |
| | | N | 81 | 81 | 81 | 81 | 81 |

|  |  |  |  |  |  |  |  |
|---|---|---|---|---|---|---|---|
| CO | Yes | Spearman r | .013 | .265** | 1.000 | .241** | .182** |
|  |  | P | .794 | .000 | . | .000 | .000 |
|  |  | N | 384 | 384 | 384 | 384 | 384 |
|  | No | Spearman r | .265* | -.069 | 1.000 | -.002 | .084 |
|  |  | P | .017 | .538 | . | .986 | .456 |
|  |  | N | 81 | 81 | 81 | 81 | 81 |
| LT | Yes | Spearman r | -.017 | .290** | .241** | 1.000 | .160** |
|  |  | P | .737 | .000 | .000 | . | .002 |
|  |  | N | 384 | 384 | 384 | 384 | 384 |
|  | No | Spearman r | -.037 | .086 | -.002 | 1.000 | .039 |
|  |  | P | .745 | .444 | .986 | . | .727 |
|  |  | N | 81 | 81 | 81 | 81 | 81 |
| MA | Yes | Spearman r | .244** | .091 | .182** | .160** | 1.000 |
|  |  | P | .000 | .075 | .000 | .002 | . |
|  |  | N | 384 | 384 | 384 | 384 | 384 |
|  | No | Spearman r | .220* | .021 | .084 | .039 | 1.000 |
|  |  | P | .048 | .853 | .456 | .727 | . |
|  |  | N | 81 | 81 | 81 | 81 | 81 |

**Correlation is significant at the 0.01 level (2-tailed).
*Correlation is significant at the 0.05 level (2-tailed).

⇒ Since the correlation coefficient is 0.170, while there is a statistically significant (P<0.05) positive and negligible linear relationship between PO and UN of online game players, there is not a statistically significant relationship for non-players.

⇒ Since the correlation coefficient is 0.265, while there is a statistically significant (P<0.05) positive and weak relationship between PO and CO of non-players, there is not a statistically significant relationship for online game players.

⇒ Since the correlation coefficient is 0.244 for online game players(P<0.01) and 0.220 for non-players (P<0.05), there is a statistically significant positive and weak linear relationship between PO and MA.

$\Rightarrow$ Since the correlation coefficient is 0.2650, while there is a statistically significant (P<0.01) positive and weak linear relationship between UN and CO of online game players, there is not a statistically significant relationship for non-players.

$\Rightarrow$ Since the correlation coefficient is 0.290, while there is a statistically significant (P<0.01) positive and weak linear relationship between UN and LT of online game players, there is not a statistically significant relationship for non-players.

$\Rightarrow$ Since the correlation coefficient is 0.241, while there is a statistically significant (P<0.01) positive and weak linear relationship between CO and LT of online game players, there is not a statistically significant relationship for non-players.

$\Rightarrow$ Since the correlation coefficient is 0.182, while there is a statistically significant (P<0.01) positive and negligible linear relationship between CO and MA of online game players, there is not a statistically significant relationship for non-players.

$\Rightarrow$ Since the correlation coefficient is 0.160, while there is a statistically significant (P<0.01) positive and negligible linear relationship between LT and MA of online game players, there is not a statistically significant relationship for non-players.

## 4.8 Hypothesis Testing

Some statistical tests were performed to determine which hypotheses were supported and the results are shown in Table 26.

Table 26: Hypothesis Testing

| Hypothesis | Supported/ Not Supported |
|---|---|
| **H1.** Power Distance is significantly affected by Online Games. | Supported |
|    **H1a.** Relationship between Online Games and Power Distance is moderated by Gender. | Not Supported |
|    **H1b.** Relationship between Online Games and Power Distance is moderated by Age. | Supported |
| **H2.** Power Distance is significantly affected by Playing History. | Supported |
| **H3.** Uncertainty Avoidance is significantly affected by Online Games. | Supported |
|    **H3a.** Relationship between Online Games and Uncertainty Avoidance is moderated by Gender. | Not Supported |
|    **H3b.** Relationship between Online Games and Uncertainty Avoidance is moderated by Age. | Not Supported |
| **H4.** Uncertainty Avoidance is significantly affected by Playing History. | Supported |
| **H5.** Collectivism is significantly affected by Online Games. | Not Supported |
|    **H5a.** Relationship between Online Games and Collectivism is moderated by Gender. | Not Supported |
|    **H5b.** Relationship between Online Games and Collectivism is moderated by Age. | Not Supported |
| **H6.** Collectivism is significantly affected by Playing History. | Not Supported |
| **H7.** Long-Term Orientation is significantly affected by Online Games. | Supported |
|    **H7a.** Relationship between Online Games and Long-Term Orientation is moderated by Gender. | Not Supported |
|    **H7b.** Relationship between Online Games and Long-Term Orientation is moderated by Age. | Not Supported |
| **H8.** Long-Term Orientation is significantly affected by Playing History. | Supported |
| **H9.** Masculinity is significantly affected by Online Games. | Not Supported |
|    **H9a.** Relationship between Online Games and Masculinity is moderated by Gender. | Not Supported |
|    **H9b.** Relationship between Online Games and Masculinity is moderated by Age. | Not Supported |
| **H10.** Masculinity is significantly affected by Playing History. | Not Supported |

$\Rightarrow$ According to the results in the section "4.8.1.1 Primary Analysis of the Hypotheses 1,3,5,7,9"; while there is no significant difference in online games and collectivism or masculinity, there are significant differences in online games and power distance, uncertainty avoidance and long term orientation. Therefore, while H1, H3 and H7 are supported, H5 and H9 are not supported.

$\Rightarrow$ According to the results in the section "4.8.1.2 Secondary Analysis of the Hypotheses 1,3,5,7,9"; while gender does not have a moderator role in the effect of online games on the cultural dimensions of the participants, age has a moderator role only in the effect of online games on Power Distance. Therefore, while H1b is supported, H1a, H3a, H3b, H5a, H5b, H7a, H7b, H9a, H9b are not supported.

$\Rightarrow$ According to the results in the section "4.8.2 Analysis of the Hypotheses 2,4,6,8,10"; while there is no significant difference in playing history and collectivism or masculinty, there are significant differences in playing history and power distance, uncertainty avoidance and long term orientation. Therefore, while H2, H4 and H8 are supported, H6 and H10 are not supported.

## 4.8.1 Analysis of the Hypotheses 1,3,5,7,9

In this section, hypothesis 1,3,5,7 and 9 were examined together with their sub-dimensions. The main significance difference was analyzed in the primary analyses, the influence of the moderators were analyzed in the secondary analyses.

### 4.8.1.1 Primary Analysis of the Hypotheses 1,3,5,7,9

In this section, Mann-Whitney U test was applied to test whether online games make a significant difference on the factors of cultural values. Since it was concluded in previous tests that 35 participants' answers who had lived abroad for more than 1 year

could affect the overall MA results, MA was analyzed by considering two different possibilities, both with and without the addition of 35 participants.

Table 27: Normality Test Results of Online Games and Cultural Values

| | ONLINE GAMING | Mean | Min | Max | Sk | Ku | $P^{K-S}$ | $P^{S-W}$ |
|---|---|---|---|---|---|---|---|---|
| PO | Yes | 2.33 | 2.26 | 2.40 | .368 | -.047 | .000 | .000 |
| | No | 1.87 | 1.75 | 1.99 | 1.238 | 1.197 | .000 | .000 |
| UN | Yes | 4.17 | 4.10 | 4.23 | -.651 | -.228 | .000 | .000 |
| | No | 3.95 | 3.86 | 4.04 | .897 | 1.710 | .000 | .000 |
| CO | Yes | 3.60 | 3.52 | 3.69 | -.544 | .200 | .000 | .000 |
| | No | 3.55 | 3.36 | 3.73 | -.470 | .226 | .049 | .078 |
| LT | Yes | 4.25 | 4.20 | 4.30 | -.586 | -.032 | .000 | .000 |
| | No | 4.52 | 4.45 | 4.59 | -.831 | 1.194 | .000 | .000 |
| MA | Yes | 2.95 | 2.84 | 3.05 | .087 | -.789 | .000 | .000 |
| | No | 2.74 | 2.51 | 2.97 | .188 | -.531 | .002 | .020 |
| MA Without35 | Yes | 2.99 | 2.88 | 3.10 | .078 | -.759 | .001 | .000 |
| | No | 2.73 | 2.50 | 2.97 | .205 | -.580 | .008 | .022 |

\* It is seen in the "kolmogrov smirnov" test results that there is not a normal distribution. Therefore, the Mann-Whitney U test, which is one of the non-parametric tests, is applied.

Table 28: Mann-Whitney U Test Results of Online Games and Cultural Values

| | Do you play online games regularly? | n | X | Median | Mean Rank | Mann-Whitney U | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | U | Z | p |
| PO | Yes | 384 | 2.33 | 2.40 | 248.84 | 9471 | -5.55 | .000 |
| | No | 81 | 1.87 | 1.80 | 157.93 | | | |
| UN | Yes | 384 | 4.17 | 4.20 | 245.39 | 10796 | -4.35 | .000 |
| | No | 81 | 3.95 | 3.80 | 174.28 | | | |
| CO | Yes | 384 | 3.60 | 3.66 | 234.80 | 14862.5 | -.62 | .529 |
| | No | 81 | 3.55 | 3.66 | 224.49 | | | |
| LT | Yes | 384 | 4.25 | 4.33 | 220.10 | 10600 | -4.53 | .000 |
| | No | 81 | 4.52 | 4.50 | 294.14 | | | |
| MA | Yes | 384 | 2.95 | 3.00 | 237.42 | 13855 | -1.54 | .122 |
| | No | 81 | 2.74 | 3.00 | 212.05 | | | |

| MA Without35 | Yes | 351 | 2.99 | 3.00 | 220.96 | 11949 | -1.92 | .054 |
|---|---|---|---|---|---|---|---|---|
| | No | 79 | 2.73 | 3.00 | 191.25 | | | |
| SPSS doesn't provide an effect size statistic, therefore an approximate value of r is calculated with this formula: **r = Z/√N** | | | | | | | | |

The Mann-Whitney U Test reveales that while there is no significant difference (P>.05) in CO and MA results, there are significant differences in PO, UN and LT results. Therefore, while H1, H3 and H7 are supported, H5 and H9 are not supported.

$\Rightarrow$ Power Distance of online game players (Md= 2.40, n= 384) are significantly higher than non-players (Md= 1.80, n= 81), U= 9471, z= -5.55, p= .000, r= -0.25. According to Cohen (1998) criteria there is a small effect size. It shows that power distance is affecting online game players more.

$\Rightarrow$ Uncertainty Avoidance of online game players (Md= 4.20, n= 384) are significantly higher than non-players (Md= 3.80, n= 81), U= 10796, z= -4.35, p= .000, r= -0.20. According to Cohen (1998) criteria there is a small effect size. It shows that uncertainty avoidance is affecting online game players more.

$\Rightarrow$ Long Term Orientation of online game players (Md= 4.33, n= 384) are significantly lower than non-players (Md= 4.50, n= 81), U= 10600, z= -4.53, p= .000, r= -0.21. According to Cohen (1998) criteria there is a small effect size. It shows that online game players are less affected by long term orientation than non-players.

**4.8.1.2 Secondary Analysis of the Hypotheses 1,3,5,7,9**

In this section, hypotheses H1a, H3a, H5a, H7a, H9a and hypotheses H1b, H3b, H5b, H7b, H9b were examined. SPSS PROCESS macro version 4 were used for data analysis.

**'a' Part Analysis of the Hypotheses 1,3,5,7,9**

SPSS macro PROCESS was used to test the gender moderator effect on the impact of online games on individual cultural values. Moderation effect measurement was carried out as shown in the Figure 14.
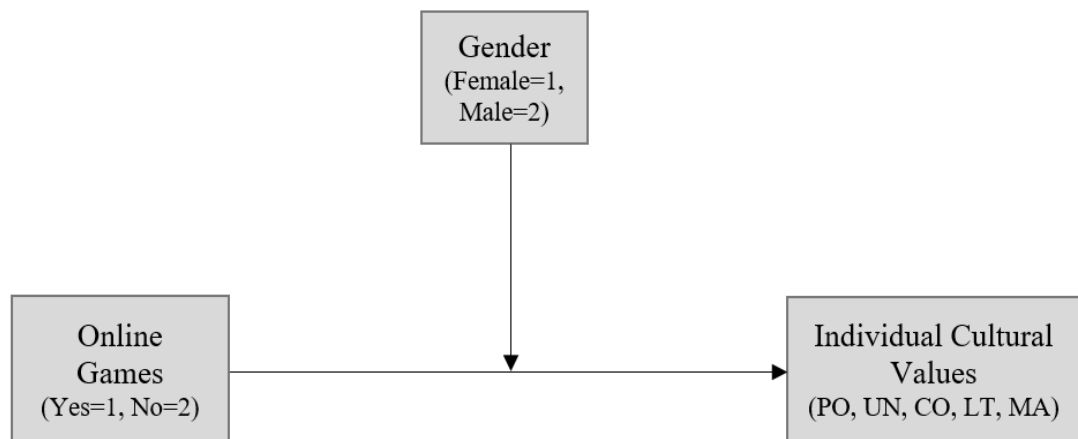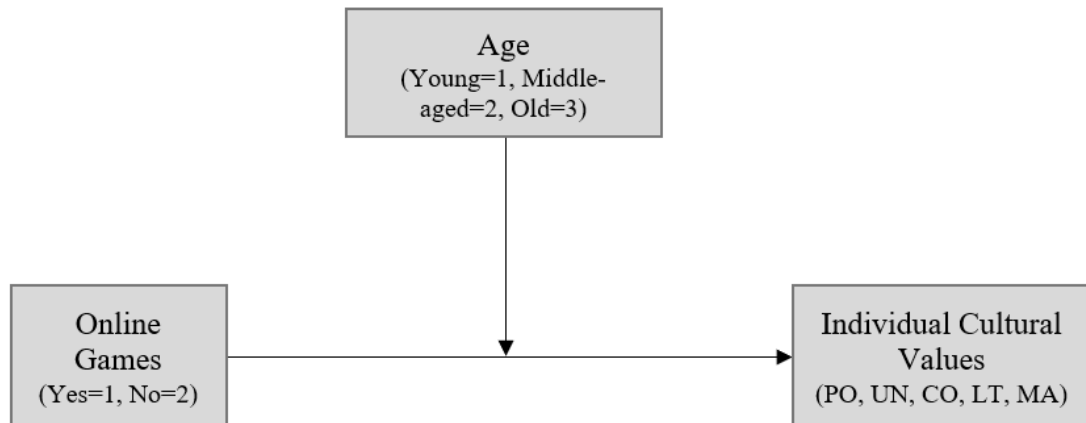
Figure 14: Intervariable Relationship Diagram

Table 29: PROCESS Results for the Gender Moderator Analysis

| Moderator Effect Of Gender | | | | | | |
|---|---|---|---|---|---|---|
| Regression results for PO as dependent variable | | | | | | |
| Model | $R^2$ | MSE | F | df1 | df2 | p |
| Summary | .089 | .462 | 14.989 | 3.000 | 461.000 | .000 |
| | coeff | se | t | p | | |
| constant | 1.891 | .400 | 4.726 | .000 | | |
| Onl_Game | -.145 | .280 | -.518 | .605 | | |
| Gender | .444 | .238 | 1.869 | .062 | | |
| Int_1 | -.120 | .181 | -.666 | .506 | | |
| X*W | $R^2$-chng | F | df1 | df2 | p | |
| | .001 | .443 | 1.000 | 461.000 | .506 | |
| Regression results for UN as dependent variable | | | | | | |
| | $R^2$ | MSE | F | df1 | df2 | p |

| Model Summary | .022 | .355 | 3.526 | 3.000 | 461.000 | .015 |
|---|---|---|---|---|---|---|
| | coeff | se | t | p | | |
| constant | 3.990 | .351 | 11.383 | .000 | | |
| Onl_Game | .078 | .246 | .316 | .752 | | |
| Gender | .256 | .208 | 1.230 | .219 | | |
| Int_1 | -.199 | .158 | -1.255 | .210 | | |
| X*W | R²-chng | | F | df1 | df2 | p |
| | .003 | | 1.574 | 1.000 | 461.000 | .210 |

**Regression results for CO as dependent variable**

| Model Summary | R² | MSE | F | df1 | df2 | p |
|---|---|---|---|---|---|---|
| | .005 | .702 | .698 | 3.000 | 461.000 | .554 |
| | coeff | se | t | p | | |
| constant | 3.292 | .493 | 6.677 | .000 | | |
| Onl_Game | .069 | .346 | .198 | .843 | | |
| Gender | .184 | .293 | .628 | .530 | | |
| Int_1 | -.047 | .223 | -.211 | .833 | | |
| X*W | R²-chng | | F | df1 | df2 | p |
| | .000 | | .044 | 1.000 | 461.000 | .833 |

**Regression results for LT as dependent variable**

| Model Summary | R² | MSE | F | df1 | df2 | p |
|---|---|---|---|---|---|---|
| | .045 | .234 | 7.305 | 3.000 | 461.000 | .000 |
| | coeff | se | t | p | | |
| constant | 3.959 | .285 | 13.900 | .000 | | |
| Onl_Game | .227 | .200 | 1.136 | .256 | | |
| Gender | -.007 | .169 | -.042 | .967 | | |
| Int_1 | .045 | .129 | .352 | .725 | | |
| X*W | R²-chng | | F | df1 | df2 | p |
| | .000 | | .124 | 1.000 | 461.000 | .725 |

**Regression results for MA as dependent variable**

| Model Summary | R² | MSE | F | df1 | df2 | p |
|---|---|---|---|---|---|---|
| | .119 | 1.001 | 20.749 | 3.000 | 461.000 | .000 |
| | coeff | se | t | p | | |
| constant | 1.014 | .589 | 1.721 | .086 | | |
| Onl_Game | .312 | .413 | .755 | .451 | | |
| Gender | .979 | .350 | 2.800 | .005 | | |
| Int_1 | -.082 | .266 | -.307 | .759 | | |
| X*W | R²-chng | | F | df1 | df2 | p |
| | .000 | | .094 | 1.000 | 461.000 | .759 |

**Regression results for MA_without35 as dependent variable**

| Model Summary | R² | MSE | F | df1 | df2 | p |
|---|---|---|---|---|---|---|
| | .133 | .949 | 21.704 | 3.000 | 426.000 | .000 |
| | coeff | se | t | p | | |
| constant | 1.022 | .596 | 1.716 | .087 | | |
| Onl_Game | .297 | .412 | .722 | .471 | | |
| Gender | 1.011 | .354 | 2.858 | .004 | | |
| Int_1 | -.088 | .267 | -.329 | .742 | | |

| X*W | R²-chng | F | df1 | df2 | p |
|-----|---------|---|-----|-----|---|
|  | .000 | .108 | 1.000 | 426.000 | .742 |

When $R^2$, MSE, F and p values are examined, it is seen that gender does not have a moderator role on the relationship between online games and the cultural values. Therefore, H1a, H3a, H5a, H7a and H9a are not supported.

**'b' Part Analysis of the Hypotheses 1,3,5,7,9**

SPSS macro PROCESS was used to test the age moderator effect on the impact of online games on individual cultural values. Moderation effect measurement was carried out as shown in the Figure 15.



Figure 15: Intervariable Relationship Diagram 2

Table 30: PROCESS Results for the Age Moderator Analysis

| Moderator Effect Of Age | | | | | | |
|---|---|---|---|---|---|---|
| Regression results for PO as dependent variable | | | | | | |
| Model Summary | $R^2$ | MSE | F | df1 | df2 | p |
|  | .068 | .473 | 11.224 | 3.000 | 461.000 | .000 |
|  | coeff | se | t | p | | |
| constant | 2.267 | .275 | 8.237 | .000 | | |
| Onl_Game | -.085 | .218 | -.389 | .698 | | |
| Gender | .227 | .110 | 2.065 | .039 | | |
| Int_1 | -.149 | .075 | -1.996 | .047 | | |
| X*W | R²-chng | F | df1 | df2 | p | |
|  | .008 | 3.984 | 1.000 | 461.000 | .047 | |

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| Age | Conditional Effect | SE | z | p | LLCI | ULCI |
|---|---|---|---|---|---|---|
| 1.159 | -.258 | .145 | -1.781 | .076 | -.543 | .027 |
| 2.135 | -.404 | .101 | -4.003 | .000 | -.602 | -.206 |
| 3.112 | -.550 | .100 | -5.481 | .000 | -.747 | -.353 |

### Regression results for UN as dependent variable

| Model Summary | $R^2$ | MSE | F | df1 | df2 | p |
|---|---|---|---|---|---|---|
| | .042 | .347 | 6.790 | 3.000 | 461.000 | .000 |
| | coeff | se | t | p | | |
| constant | 3.902 | .236 | 16.540 | .000 | | |
| Onl_Game | .011 | .187 | .060 | .952 | | |
| Gender | .257 | .094 | 2.728 | .007 | | |
| Int_1 | -.124 | .064 | -1.932 | .054 | | |
| X*W | $R^2$-chng | F | df1 | df2 | p | |
| | .008 | 3.731 | 1.000 | 461.000 | .054 | |

### Regression results for CO as dependent variable

| Model Summary | $R^2$ | MSE | F | df1 | df2 | p |
|---|---|---|---|---|---|---|
| | .003 | .703 | .504 | 3.000 | 461.000 | .680 |
| | coeff | se | t | p | | |
| constant | 3.505 | .335 | 10.447 | .000 | | |
| Onl_Game | .138 | .226 | .520 | .603 | | |
| Gender | .039 | .134 | .294 | .769 | | |
| Int_1 | -.057 | .091 | -.626 | .531 | | |
| X*W | $R^2$-chng | F | df1 | df2 | p | |
| | .001 | .392 | 1.000 | 461.000 | .531 | |

### Regression results for LT as dependent variable

| Model Summary | $R^2$ | MSE | F | df1 | df2 | p |
|---|---|---|---|---|---|---|
| | .048 | .234 | 7.672 | 3.000 | 461.000 | .000 |
| | coeff | se | t | p | | |
| constant | 3.965 | .193 | 20.493 | .000 | | |
| Onl_Game | .223 | .153 | 1.454 | .147 | | |
| Gender | .032 | .077 | .418 | .676 | | |
| Int_1 | .003 | .053 | .051 | .960 | | |
| X*W | $R^2$-chng | F | df1 | df2 | p | |
| | .000 | .003 | 1.000 | 461.000 | .960 | |

### Regression results for MA as dependent variable

| Model Summary | $R^2$ | MSE | F | df1 | df2 | p |
|---|---|---|---|---|---|---|
| | .012 | 1.123 | 1.820 | 3.000 | 461.000 | .143 |
| | coeff | se | t | p | | |
| constant | 3.616 | .424 | 8.523 | .000 | | |
| Onl_Game | -.428 | .337 | -1.271 | .204 | | |
| Gender | -.239 | .170 | -1.410 | .159 | | |
| Int_1 | .117 | .115 | 1.013 | .311 | | |
| X*W | $R^2$-chng | F | df1 | df2 | p | |
| | .002 | 1.027 | 1.000 | 461.000 | .311 | |

### Regression results for MA_without35 as dependent variable

| Model Summary | $R^2$ | MSE | F | df1 | df2 | p |
|---|---|---|---|---|---|---|
| | .010 | 1.082 | 1.502 | 3.000 | 426.000 | .213 |
| | coeff | se | t | p | | |
| constant | 3.475 | .435 | 7.990 | .000 | | |
| Onl_Game | -.374 | .345 | -1.082 | .280 | | |
| Gender | -.114 | .173 | -.657 | .511 | | |

| Int_1 | | .058 | .117 | .497 | .619 | |
|---|---|---|---|---|---|---|
| X*W | | R²-chng | F | df1 | df2 | p |
| | | .001 | .247 | 1.000 | 426.000 | .619 |

When the results in Table 30 are examined, it is seen that while age does not have a moderator role in the effect of online games on UN, CO, LT and MA, age has a moderator role in the effect of online games on PO. Accordingly, the established regression model for PO is statistically significant ($R^2$= .068; MSE= .473; F= 11.224; p<0.0001) and the positive relationship between power distance and online games gets stronger with the increase in the age of the online game players. According to the $R^2$ value, age explains 6.8% of the relationship between power distance and online games. Figure 16 shows the direction and extent of the moderating impact. Therefore, while H1b is supported, H3b, H5b, H7b and H9b are not supported.
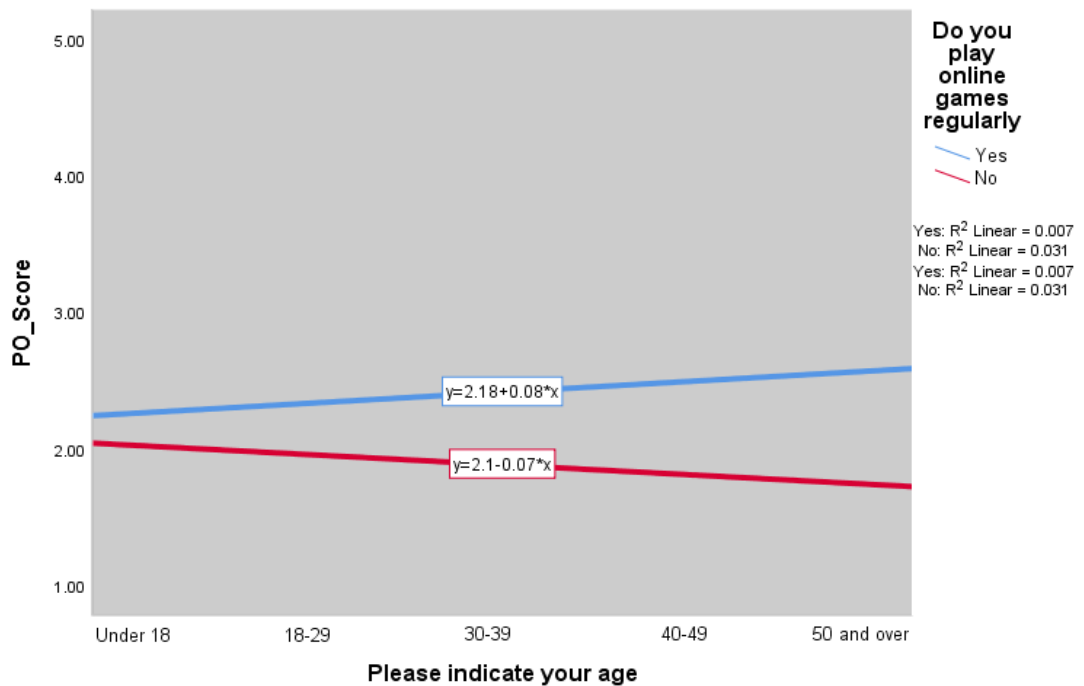


Figure 16: Moderator Role of Age in the Effect of Online Games on PO

The equations to be established in Figure 16 is as follows:

≡ Power Distance of Online Game Players = 2.18 + 0.08 * Age

≡ Power Distance of Non-Players = 2.1 – 0.07 * Age

### 4.8.2 Analysis of the Hypotheses 2,4,6,8,10

In this section, Kruskal-Wallis test is applied to test whether playing history make a significant difference on cultural values.

Table 31: Kruskal-Wallis Test Results of Playing History and Cultural Values

| *<.05 | Playing History | N | Sd | $X^2$ | P | Variance |
|---|---|---|---|---|---|---|
| PO | 1) Never Played | 81 | | | | 2,3,4,5 |
| | 2) Less than 5 years | 75 | | | | 1,5 |
| | 3) 5 to 10 years | 169 | 4 | 35.214 | .000 | 1 |
| | 4) 11 to 15 years | 83 | | | | 1 |
| | 5) More than 15 years | 57 | | | | 1,2 |
| UN | 1) Never Played | 81 | | | | 2,3,4,5 |
| | 2) Less than 5 years | 75 | | | | 1 |
| | 3) 5 to 10 years | 169 | 4 | 24.639 | .000 | 1,4 |
| | 4) 11 to 15 years | 83 | | | | 1,3 |
| | 5) More than 15 years | 57 | | | | 1 |
| CO | 1) Never Played | 81 | | | | - |
| | 2) Less than 5 years | 75 | | | | - |
| | 3) 5 to 10 years | 169 | 4 | 4.183 | .382 | - |
| | 4) 11 to 15 years | 83 | | | | - |
| | 5) More than 15 years | 57 | | | | - |
| LT | 1) Never Played | 81 | | | | 2,3,4,5 |
| | 2) Less than 5 years | 75 | | | | 1 |
| | 3) 5 to 10 years | 169 | 4 | 20.904 | .000 | 1 |
| | 4) 11 to 15 years | 83 | | | | 1 |
| | 5) More than 15 years | 57 | | | | 1 |
| MA | 1) Never Played | 81 | | | | - |
| | 2) Less than 5 years | 75 | | | | - |
| | 3) 5 to 10 years | 169 | 4 | 6.448 | .168 | - |
| | 4) 11 to 15 years | 83 | | | | - |
| | 5) More than 15 years | 57 | | | | - |
| MA Without35 | 1) Never Played | 79 | | | | - |
| | 2) Less than 5 years | 71 | | | | - |
| | 3) 5 to 10 years | 156 | 4 | 7.594 | .108 | - |
| | 4) 11 to 15 years | 74 | | | | - |
| | 5) More than 15 years | 50 | | | | - |

According to the Table 31, there are significant differences in the PO ($X^2_{(4)}$= 35.214; p<.05), UN ($X^2_{(4)}$= 24.639; p<.05) and LT ($X^2_{(4)}$= 20.904; p<.05). This significant difference is mostly due to the distinction between never played non-players and

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players. However, PO and UN shows more detailed results that Power Distance score of the participants who started playing online games less than 5 years ago is significantly higher than those who started more than 15 years ago and Uncertainty Avoidance score of the participants who started playing online games 5 to 10 years ago is significantly higher than those who started 11 to 15 years ago. By looking at these results, while H2, H4 and H8 are supported, H6 and H10 are not supported.

# Chapter 5

# CONCLUSION

This study focused on online games using HCI and measured the changes in the cultural values of the players. The results also shed light on the potential dangers of HCI technologies on local cultures. In the earlier chapters, the concepts of Human-Computer Interaction, Cultural Computing, Individual Cultural Orientation Scale and related theories, methodology of the study and the details of it were explained. All the hypotheses were defined and analyzed.

In this section, based on the online gaming industry, the potential dangers of HCI and cultural and managerial implications regarding changes in Hofstede's cultural values in Turkey were discussed. In addition, the limitations of the study and suggestions for future studies were mentioned.

## 5.1 Cultural Implications

The existing literature shows that there is a mutual interaction between digital games and personality, culture and human nature as shown in Figure 10, and with the use of HCI applications in the game industry, a growing interest to digital games have emerged. At the same time, it is pointed out in the literature that humanity has come to the threshold of a great cultural revolution with HCI and cultural computing.
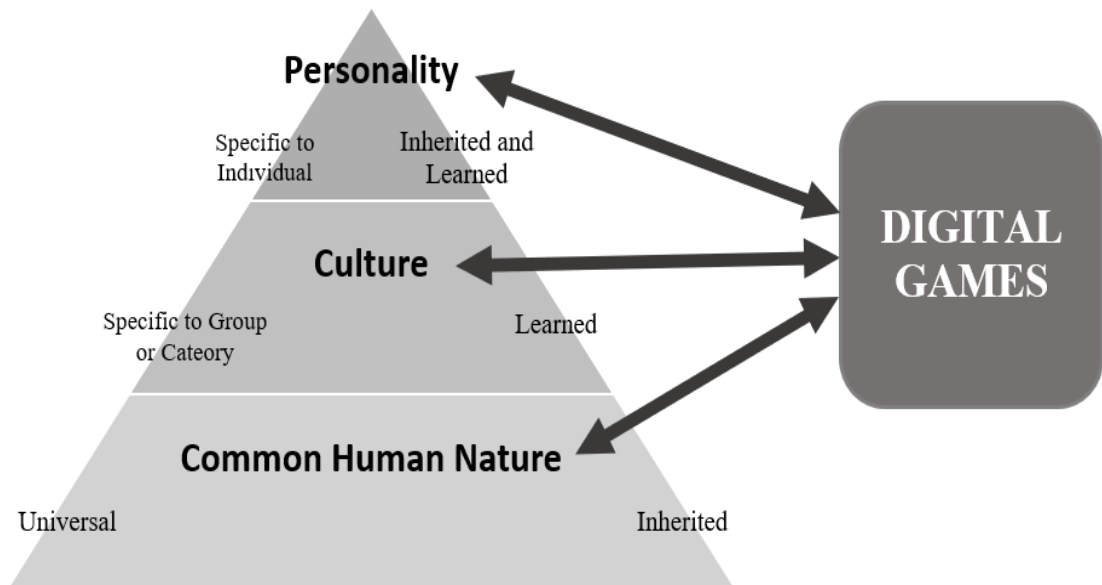
* Adopted from Hofstede's Pyramid Model of Culture

Figure 17: Human Programming and Digital Games

HCI have the potential to change local cultures in a number of ways. They can provide new ways for people to interact and communicate with each other, as well as new ways for people to access, transform and sell on the information. In the rapidly developing technology world, these new ways can have some bad consequences for local cultures- loss of local knowledge, languages and traditions, economic dislocation and unemployment etc. Rapid cultural change can lead to social disharmony and conflict, as people have trouble adapting to new ways and customs. It can also lead to the loss of traditional knowledge and values and cause economic dislocation and hardship. Because of these potential problems, it is important to investigate the cultural effects of technologies. To do that, this study measured the individual cultural value differences created by online games on users i.e. players, and the traces that emerged in local cultures as a result of HCI.

It was found in the results of this research that while power distance and uncertainty avoidance scores of online game players are higher than non-players, long term

orientation score is lower and these differences change according to the length of the starting time to online games. These suggest that online game players are more autocratic, obedient, comfortable with hierarchical structures, are more stress sensitive, risk averse, structured learner and are more analytical thinker, quick result searcher, social spender than non-players. Moreover, players who have been playing online games for a longer period of time tend to occur higher differences. At the same time, it is seen in the results that the difference in the power distance of the players increases with age. This shows that as the age increases, the increase in the power distance of the players depending on the online games also increases.

All these findings show that, HCI can hide some cultural dangers in it and cause some bad consequences for traditional societies in the long run. It is therefore important that new technologies are created in ways that do not have these negative consequences. One way of doing this is to use technology carefully and create new platforms to balance cultural changes and help preserve local cultural values. For example, cultural computing can be used to preserve and share local knowledge and traditions.

## 5.2 Managerial Implications

Today, technology is advancing at an unprecedented rate and people are becoming more and more dependent on it because of the services it provides. Among all people, especially generation Z is more familiar with technological developments and uses them more. For this reason, businesses can target changes in the behavior patterns of future adults and gain benefits by adapting to these changes faster than their competitors. Businesses located in Turkey or operating to Turks, for instance, can design their future by considering the changes in the behavior patterns of prospective Turkish employee candidates and customers.

There are several benefits for businesses to follow cultural changes:

1. Improved Employee Retention: When employees feel that their company is supportive of their cultural values, they are more likely to stay with the company for a longer period of time. This improved employee retention can lead to a number of benefits for businesses, including reduced training costs and improved morale.

2. Increased Employee Engagement: Employees who feel that their company is supportive of their cultural values are also more likely to be engaged in their work. This increased engagement can lead to improved productivity and a number of other benefits for businesses.

3. Improved Customer Service: When businesses follow cultural changes, they are able to better understand and serve their customers. This improved customer service can lead to increased sales and improved customer loyalty.

4. Improved Public Image: When businesses follow cultural changes, they often see an improvement in their public image. This improved public image can lead to increased sales, improved employee retention, and a number of other benefits.

Based on the results of this study, there is a great increase in the masculinity under the age of 18. In the context of the employee, the increase in masculinity increases the possibility of dissatisfaction with the current practices and policies of the organization. It also increases organizational criticism. The organization should provide a more supportive and nurturing environment for employees. The organization should also focus on employee development and satisfaction. In the consumer context, the increase in masculinity is associated with a decrease in the need to buy hair care products, cosmetics and health products. In the business context, the increase in masculinity is associated with a decrease in the need for customer service and environment protection a focus on more traditional business values and money.

At the same time, it is seen in the results that there is a decrease in the long-term orientation score under the age of 18 and 18-29. In the context of the employee, the decrease in the long-term orientation is likely to result in a decrease in employee loyalty and commitment to the organization. This may lead to an increase in turnover as employees seek out opportunities that offer more security and stability. In addition, the decrease in long-term orientation may also lead to a decrease in motivation and productivity as employees become less invested in their work and the organization's future. In the consumer context, the decrease in the long-term orientation may lead to a decrease in spending on durable goods, as consumers become less willing to make long-term investments. This may lead to a decrease in economic growth, as durable goods consumption accounts for a significant portion of total spending. In the business context, the decrease in long-term orientation may lead to a reduction in the commitment to organizational goals, as employees become more focused on achieving short-term outcomes. This may have a negative impact on the organization's ability to achieve its long-term objectives.

## 5.3 Limitations of the Study

There are some limitations to this study that should be taken into account. The first limitation is that a qualitative study would be more appropriate to gain a deeper understanding of the cultural dangers of HCI. Second, despite the large sample size, the number of participants for non-players is relatively small. Third, data was collected through an online survey. This may have caused the participants to mark the questions without understanding the actual meaning. Finally, the other limitation is that this study was carried out over 5 twitch broadcasters with the snowball sampling method, so a biased sample may have been reached.

## 5.4 Recommendation

In the light of what was learned as a result of this research, the following can be suggested for future studies:

❖ Future studies may consider the potential dangers of HCI and cultural computing.

❖ Future studies may consider other cultures or other HCI based practices.

❖ Future studies may consider how business world can protect themselves against rapid cultural changes and gain benefits from cultural changes in employees and customers.

❖ Future studies may consider the reasons for women's perception of lower power distance than men and the reasons why the option 'other' is not selected in the gender question.

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# APPENDICES

## Appendix 1: Participant Debrief Form (English)

》》》 Please note, that this survey will be launched in Turkish.

**INTRO**

Thank you for agreeing to take part in this important survey.

The aim of this research is to explore the effects of online games on cultural values. The questionnaire is open to the participation of both online game players and non-players.

There's no right or wrong in this survey, but it is important that you finish all the questions. It will take you approximately 7 minutes to complete this questionnaire.

Participation in the survey is based on the snowball method. In this method, increasing the number of participants and the scope of the research is achieved by sharing the relevant link with your close friends and family members after you answer the questionnaire. For this reason, it is very valuable that you support this scientific research by sharing the survey with more people.

All of the answers you provide will be kept strictly confidential and will be used only for the academic research purpose. If you feel any distress or discomfort about the survey and you would like to speak to a professional, please contact the researcher (Şefika Tanık, 20500068@emu.edu.tr) or the research supervisor (Prof. Dr. Melek Şule Aker, sule.aker@emu.edu.tr).

Once again thank you for your valuable contribution to this research.

Please click 'Next' to begin.

## Appendix 2: Participant Debrief Form (Turkish)

## GİRİŞ

Bu önemli ankete katılmayı kabul ettiğiniz için teşekkür ederiz.

Araştırmanın amacı, çevrimiçi oyunların kültürel değerler üzerindeki etkilerini araştırmaktır. Anket hem çevrimiçi oyun oyuncularının hem de oyuncu olmayanların katılımına açıktır.

Ankette doğru ya da yanlış yoktur, ancak tüm soruları bitirmeniz önemlidir. Anketi doldurmanız yaklaşık 7 dakikanızı alacaktır.

Ankete katılım kartopu yöntemi üzerinden olmaktadır. Bu yöntemde katılımcı sayısının ve araştırma kapsamının arttırılması sizlerin anketi cevapladıktan sonra ilgili linki yakın arkadaş ve aile bireyleriniz ile paylaşmanız ile gerçekleşmektedir. Bu nedenle anketi daha fazla kişiyle paylaşarak bu bilimsel araştırmaya destek olmanız çok değerlidir.

Vereceğiniz tüm cevaplar kesinlikle gizli tutulacak ve sadece akademik araştırma amacıyla kullanılacaktır. Anket ile ilgili herhangi bir sıkıntı veya rahatsızlık hissederseniz ve bir uzmanla görüşmek isterseniz lütfen araştırmacı (Şefika Tanık, 20500068@emu.edu.tr) veya araştırma danışmanı (Prof. Dr. Melek Şule Aker, sule.aker@emu.edu.tr) ile iletişime geçiniz.

Araştırmaya yaptığınız değerli katkılarınız için bir kez daha teşekkür ederiz.

Başlamak için lütfen 'Sonraki' seçeneğini tıklayın.

## Appendix 3: Research Questionnaire (English)

### DEMOGRAPHIC INFORMATION

1. Please indicate your gender:
   - ☐ Female
   - ☐ Male
   - ☐ Other

2. Please indicate your age:
   - ☐ Under 18
   - ☐ 18-29
   - ☐ 30-39
   - ☐ 40-49
   - ☐ 50 and over

3. Are you a Turkish citizen by birth?
   - ☐ Yes
   - ☐ No

4. Have you ever continuously stayed out of Turkey for more than one year?
   - ☐ Yes
   - ☐ No

➢ Please answer the following questions by considering specifically online games rather than general games.

5. Do you play online games?
   - ☐ Yes
   - ☐ No

6. How long have you been playing online games?
   - ☐ Less than 5 years
   - ☐ 5 to 10 years
   - ☐ 11 to 15 years
   - ☐ More than 15 years

≫ 4th question is only open to the participants who answered 'YES' to the 3th question.
6th question is only open to the participants who answered 'YES' to the 5th question.

# CULTURAL INFORMATION

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Please indicate to what extent you agree or disagree with the following statements.

| | Strongly Disagree | Disagree | Undecided | Agree | Strongly Agree |
|---|---|---|---|---|---|
| 1. People in higher positions should make most decisions without consulting people in lower positions. | ○ | ○ | ○ | ○ | ○ |
| 2. People in higher positions should not ask the opinions of people in lower positions too frequently. | ○ | ○ | ○ | ○ | ○ |
| 3. People in higher positions should avoid social interaction with people in lower positions. | ○ | ○ | ○ | ○ | ○ |
| 4. People in lower positions should not disagree with decisions by people in higher positions. | ○ | ○ | ○ | ○ | ○ |
| 5. People in higher positions should not delegate important tasks to people in lower positions. | ○ | ○ | ○ | ○ | ○ |
| 6. It is important to have instructions spelled out in detail so that I always know what I'm expected to do. | ○ | ○ | ○ | ○ | ○ |
| 7. It is important to closely follow instructions and procedures. | ○ | ○ | ○ | ○ | ○ |
| 8. Rules and regulations are important because they inform me of what is expected of me. | ○ | ○ | ○ | ○ | ○ |
| 9. Standardized work procedures are helpful. | ○ | ○ | ○ | ○ | ○ |
| 10. Instructions for operations are important. | ○ | ○ | ○ | ○ | ○ |
| 11. Individuals should sacrifice self-interest for the group. | ○ | ○ | ○ | ○ | ○ |
| 12. Individuals should stick with the group even through difficulties. | ○ | ○ | ○ | ○ | ○ |
| 13. Group welfare is more important than individual rewards. | ○ | ○ | ○ | ○ | ○ |

14. Group success is more important than individual success.

    ○        ○        ○        ○        ○

15. Individuals should only pursue their goals after considering the welfare of the group.

    ○        ○        ○        ○        ○

16. Group loyalty should be encouraged even if individual goals suffer.

    ○        ○        ○        ○        ○

17. People should manage money carefully

    ○        ○        ○        ○        ○

18. People should go on resolutely in spite of the opposition.

    ○        ○        ○        ○        ○

19. Personal steadiness and stability is important.

    ○        ○        ○        ○        ○

20. Long-term planning is important.

    ○        ○        ○        ○        ○

21. People should give up today's fun for success in the future.

    ○        ○        ○        ○        ○

22. Working hard for success in the future is important.

    ○        ○        ○        ○        ○

23. It is more important for men to have a professional career than it is for women.

    ○        ○        ○        ○        ○

24. Men usually solve problems with logical analysis; women usually solve problems with intuition.

    ○        ○        ○        ○        ○

25. Solving difficult problems usually requires an active, forcible approach, which is typical of men.

    ○        ○        ○        ○        ○

26. There are some jobs that a man can always do better than a woman.

    ○        ○        ○        ○        ○

## Appendix 4: Research Questionnaire (Turkish)

### DEMOGRAFİK SORULAR

1. Lütfen cinsiyetinizi seçiniz:
   - ☐ Kadın
   - ☐ Erkek
   - ☐ Diğer

2. Lütfen yaşınızı seçiniz:
   - ☐ 18 altı
   - ☐ 18-29
   - ☐ 30-39
   - ☐ 40-49
   - ☐ 50 ve üstü

3. Doğuştan Türk vatandaşı mısınız?
   - ☐ Evet
   - ☐ Hayır

4. Hiç sürekli olarak bir yıldan fazla Türkiye dışında kaldınız mı?
   - ☐ Evet
   - ☐ Hayır

➢ Lütfen aşağıdaki soruları genel oyunlardan ziyade özellikle çevrimiçi oyunları dikkate alarak cevaplayınız.

5. Çevrimiçi oyunlar oynar mısınız?
   - ☐ Evet
   - ☐ Hayır

6. Ne zamandan beri çevrimiçi oyunlar oynuyorsunuz?
   - ☐ 5 yıldan az
   - ☐ 5 ila 10 yıldır
   - ☐ 11 ila 15 yıldır
   - ☐ 15 yıldan fazla

》》 4. soru sadece 3. soruya 'EVET' cevabı veren katılımcılara açıktır.
6. soru sadece 5. soruya 'EVET' cevabı veren katılımcılara açıktır.

# KÜLTÜREL SORULAR

Lütfen aşağıdaki ifadelere ne ölçüde katılıp katılmadığınızı belirtiniz.

| | Hiç Katılmıyorum | Çok Az Katılıyorum | Orta Düzeyde Katılıyorum | Büyük Ölçüde Katılıyorum | Tamamen Katılıyorum |
|---|---|---|---|---|---|
| 1. Üst makamlarda çalışanlar, kararları astlara danışmadan almalıdır. | ○ | ○ | ○ | ○ | ○ |
| 2. Üstlerin, alt makamlarda çalışanların fikirlerine çok sık başvurmalarına gerek yoktur. | ○ | ○ | ○ | ○ | ○ |
| 3. Üst makamlarda çalışanlar, alt makamlarda çalışanlarla yüz göz olmaktan kaçınmalıdır. | ○ | ○ | ○ | ○ | ○ |
| 4. Alt makamlarda çalışanlar, üst makamların kararlarına karşı gelmemelidir. | ○ | ○ | ○ | ○ | ○ |
| 5. Üst makamlarda çalışanların, alt makamlara yetki aktarımı yalnızca önemsiz konularla sınırlı olmalıdır. | ○ | ○ | ○ | ○ | ○ |
| 6. Benden tam olarak ne istendiğini bilebilmem için açık biçimde belirtilen talimatlar gereklidir. | ○ | ○ | ○ | ○ | ○ |
| 7. Talimatları ve prosedürleri sıkı sıkıya takip etmek önemlidir. | ○ | ○ | ○ | ○ | ○ |
| 8. Kurallar ve düzenlemeler benden ne beklendiğini anlamamı sağladığı için önemlidir. | ○ | ○ | ○ | ○ | ○ |
| 9. İşimde kullanmam gereken prosedürlerin standartlaştırılmasını yararlı buluyorum. | ○ | ○ | ○ | ○ | ○ |
| 10. Yapılacak uygulamaların talimatlarla açıklanması önemlidir. | ○ | ○ | ○ | ○ | ○ |
| 11. Bireyler kişisel çıkarlarını ait oldukları grup için feda etmelidirler. | ○ | ○ | ○ | ○ | ○ |
| 12. Zorluklara rağmen bireyler içinde olduğu gruba bağlı kalmayı sürdürmelidirler. | ○ | ○ | ○ | ○ | ○ |

13. Grubun iyiliği kişisel ödüllerden daha önemlidir.

    ○      ○      ○      ○      ○

14. Grubun başarısı bireysel başarıdan daha önemlidir.

    ○      ○      ○      ○      ○

15. Bireyler, ancak grubun iyiliği sağlandıktan sonra kişisel hedeflerinin peşinden gitmelidirler.

    ○      ○      ○      ○      ○

16. Bireysel hedeflerin gerçekleşmemesi pahasına, birey grubuna sadık kalmalıdır.

    ○      ○      ○      ○      ○

17. İnsan sahip olduğu parayı iyi yönetmeli ve dikkatli harcamalıdır.

    ○      ○      ○      ○      ○

18. Bütün engellere rağmen amaçlar doğrultusunda kararlılıkla yola devam edilmelidir.

    ○      ○      ○      ○      ○

19. Uzun vadeli planlama yapmak önemlidir.

    ○      ○      ○      ○      ○

20. Bireylerin kararlı ve istikrarlı olmaları önemlidir.

    ○      ○      ○      ○      ○

21. Gelecekte başarılı olmak için, gününü gün etmekten kaçınılmalıdır.

    ○      ○      ○      ○      ○

22. İleride başarılı olmanın anahtarı çok çalışmaktır.

    ○      ○      ○      ○      ○

23. Erkekler için profesyonel bir kariyere sahip olmak kadınlara kıyasla daha önemlidir.

    ○      ○      ○      ○      ○

24. Erkekler problemleri mantıkla, kadınlar ise sezgiyle çözerler.

    ○      ○      ○      ○      ○

25. Zor problemleri çözebilmek, erkeklerin yaptığı gibi aktif ve zorlayıcı olmayı gerektirir.

    ○      ○      ○      ○      ○

26. Erkeklerin kadınlara göre her zaman daha iyi yaptıkları bazı işler bulunmaktadır.

    ○      ○      ○      ○      ○