Investigation of the Effects of Player Motivation on Sustainable Consumption Behavior: The Mediation Role of Leisure Satisfaction

Oyuncu Motivasyonunun Sürdürülebilir Tüketim Davranışı Üzerinde Etkilerinin İncelenmesi: Serbest Zaman Doyumunun Aracılık Rolü

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Investigation of the Effects of Player Motivation on Sustainable Consumption Behavior: The Mediation Role of Leisure Satisfaction[1]

Abstract

The main purpose of this research is to measure the effect of online player motivation on sustainable consumption behavior. At the same time, it will be tested whether the leisure satisfaction levels of online players play a mediating role in this effect. The study sample consists of 387 participants who play online games. In the survey form applied to the participants, there are 18 statements to measure player motivation, 19 statements to measure leisure satisfaction, and 17 statements to measure sustainable consumption behavior. The last section includes questions regarding demographic variables. In data analysis, descriptive statistics, reliability, and normality tests were tested using the IBM SPSS (Statistical Package for the Social Sciences) 21 package program. Confirmatory Factor Analyzes (CFA), and Path analysis of the study were carried out using the IBM SPSS AMOS 24 package program. In the study, the fit of the data set to the models expressing the variables was tested with CFA. The modification indices resulting from the CFA analysis were examined, and corrections were made for the models. After modification, model fit values were examined, and it was observed that the model fit of the data set was at an acceptable level. Additionally, the study findings were evaluated by testing the hypotheses established by creating a path analysis. According to the research results, the total effect of game motivation on sustainable consumption behavior was found to be statistically significant ($\beta=0.506$; $p<0.01$). A positive path coefficient was obtained between game motivation and leisure satisfaction ($\beta=0.866$; $p<0.01$). The indirect effect between gaming motivation and sustainable consumption behavior was obtained as 0.343, and the 95% confidence interval was 0.062-0.590. Since this range did not include the value 0 (zero), the indirect effect was found to be statistically significant.

Keywords: Sustainable consumption behavior, online player motivation, leisure satisfaction

Oyuncu Motivasyonunun Sürdürülebilir Tüketim Davranışı Üzerinde Etkilerinin İncelenmesi: Serbest Zaman Doyumunun Aracılık Rolü[2]

Öz

Bu araştırmanın temel amacı, çevrimiçi oyuncu motivasyonunun sürdürülebilir tüketim davranışına etkisini ölçmektir. Aynı zamanda, çevrimiçi oyuncuların serbest zaman doyum düzeylerinin bu etkide aracılık rolü sütlenip üstlenmediği de test edilecektir. Çalışma örneklemi, online oyun oynayan 387 katılımcıdan oluşmaktadır. Katılımcılara uygulanan anket formunda; oyuncu motivasyonunu ölçmeye yönelik 18 ifade, serbest zaman doyumunu ölçmeye yönelik 19 ifade ve sürdürülebilir tüketim davranışını ölçmeye yönelik 17 ifadeye yer verilmiştir. Son bölümde ise demografik değişkenlere yönelik sorulara yer verilmiştir. Veri analizinde tanımlayıcı istatistikler, güvenilirlik ve normallik testleri IBM SPSS (Statistical Package for the Social Sciences) 21 paket programı kullanılarak test edilmiştir. Çalışmanın Doğrulayıcı Faktör Analizleri (DFA) ve Yol analizleri ise IBM SPSS AMOS 24 paket programı aracılığıyla gerçekleştirilmiştir. Çalışmada DFA ile veri setinin değişkenleri ifade eden modellere uyumu test edilmiştir. DFA analizi neticesinde oluşan modifikasyon indeksleri incelenmiş ve modellere yönelik düzeltmeler yapılmıştır. Modifikasyon sonrası model uyum değerleri incelenmiş ve veri setinin model uyumunun kabul edilebilir düzeyde olduğu gözlenmiştir. Ayrıca, yol analizleri oluşturularak kurulan hipotezler test edilerek çalışma bulguları değerlendirilmiştir. Araştırma sonucuna göre, oyun motivasyonunun sürdürülebilir tüketim davranışı üzerinde toplam etkisi istatistiksel olarak anlamlı bulunmuştur ($\beta=0,506$; $p<0,01$). Oyun motivasyonu ile serbest zaman doyumu arasında pozitif bir yol katsayısı elde edilmiştir ($\beta=0,866$; $p<0,01$). Oyun motivasyonu ile sürdürülebilir tüketim davranışı arasında dolaylı etki 0,343 ve %95 güven aralığı 0,062-0,590 olarak elde edilmiş ve bu aralık 0 (sıfır) değerini içermediği için dolaylı etki istatistiksel olarak anlamlı bulunmuştur.

Anahtar Kelimeler: Sürdürülebilir tüketim davranışı, online oyuncu motivasyonu, serbest zaman doyumu

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Introduction

It is possible to specify that a basic factor that shapes life in every area where a person exists is needed. It can be stated that the vital elements established on production and consumption are to respond to needs at both individual and social points. Can be expressed as that the basic principle on which the social formation based on progress has been based since the beginning of the 19th century is the concept of production shaped by needs and desires (Doğan et al., 2015, p.661). In this context, it is necessary to consider the conjectural situation in which the concept of need evolved. Today, what is needed and what is desired is a controversial situation.

The new world order that emerged considering the developments experienced after World War II has been stated to be built based on the process of 'production of consumption' (Featherstone, 1996). Can be expressed as follows the definition formed with this new situation regarding the concept of consumption shapes and transforms the consumption behaviors of individuals. Therefore, the sustainability of consumption, which is thought to be shaped by the level of need, emerges as another topic of discussion. It can be emphasized that the consumption trend that businesses try to direct using marketing elements should be carried to a sustainable point. Elements that direct the consumption phenomenon that directs production should be reviewed.

The concept of play is considered socialization that dates to ancient times for human beings. However, it can be stated that it has undergone a factual change today, especially because of the digitization of game instruments and their transfer to electronic environments such as television screens and computer monitors. The concept of play, which in the recent past was carried out by people communicating face-to-face on a spatial level, but had a limited duration and frequency, can now be played by individuals who do not know each other at all, independent of space and duration. Games can be used as powerful tools to influence sustainable consumption behaviours. Methods such as awareness raising, education, rewards and community support can help players develop more conscious and responsible consumption habits regarding sustainability. Therefore, the concept of play can positively impact sustainability goals.

Human life has become easier with technological developments to find a place in the life practices of individuals. However, with these mentioned conveniences, the time spent by human beings on entertainment and leisure activities has also increased, as it is thought that they have more free time in life. It is possible to see the concept of entertainment within changing life practices considering technological development. In this context, technological developments, which have led to changes in many entertainment activities, have also triggered structural changes in the game phenomenon of human beings trying to socialize. Express online game platforms are developing rapidly due to reasons such as the proliferation of technological devices, making life easier in many areas of life and being more economically accessible.

With the developments in information technologies, individuals have started to use technology-based instruments in their free-time activities. In this context, the concept of free time covers a limited period in the individual's life. Free time can be defined as an individual's journey of enlightenment throughout their life (Carr, 2017, p.138). Free time satisfaction is defined as the positive feeling that individuals obtain because they participate in free-time

activities to meet their individual needs (Seigenthaler, 1997). Therefore, determine the level of satisfaction individuals have in their free-time activities with free-time satisfaction (Du Cap, 2002, p.139).

In the light of this information, the research problem is to investigate the different factors that affect sustainable consumption behaviour. In this study, the concept of player motivation was focused on and used as an independent variable. In addition, the mediating effect of leisure time satisfaction on the effect of player motivation on sustainable consumption behaviour was examined and the mediating effect of a different variable in the relationship between the independent variable and the dependent variable was mentioned.

Factors that trigger consumption habits are an important research topic. In this context, the online player motivation that constitutes the subject of this study can be associated with the phenomenon of sustainable consumption. Whether leisure satisfaction has a mediating role in this relationship is also debatable. In this context, the aim of the study is to test the concept of player motivation, which is thought to have a possible effect on sustainable consumption, and whether leisure satisfaction mediates the formation of this effect. The model put forward in line with the aim of the study will provide a different perspective on the sustainability phenomenon. This study is thought to close an important gap in the literature by addressing player motivation, which is accepted as a new phenomenon for the sustainability phenomenon, together with a mediating variable.

The concept of sustainable consumption behaviour has recently been included in the literature as a concept that is frequently researched based on the sustainability phenomenon. However, since the factor of player motivation is not included in the domestic literature and the mediating effect of leisure satisfaction is not included in the studies on sustainable consumption behaviour, it is thought that this study will fill an important gap in both domestic and international literature and provide a guide for other researchers.

After the theoretical background was established with the conceptual framework and literature information about all three variables, quantitative analysis was carried out. Within the framework of quantitative analysis, descriptive statistics, normality test, and reliability analyses were performed through the SPSS 21V package programme. To validate the scales used for the data set, the scale expressing each variable was validated with CFA. With the use of validated scales, the relationship between the effect of player motivation on sustainable consumption behaviour and structural equation modelling (SEM) was examined using the AMOS 24V package program. The mediation effect of the relationship was tested using the same package programme.

1. Literature Review
1.1. Game Motivation
Players have various factors that influence their motivation to play games. These factors can affect players' game playing tendencies, experiences, and behaviours. One of the theoretical frameworks put forward to determine gaming motivation is Self-Determination Theory. According to this theory, is expressed as autonomy, competence, relatedness, and autonomous self-management are the elements that meet the needs of everyone. In the conceptual framework, the need for autonomy is expressed as whether the individual can control his/her actions and, whether he/she is free or subject to coercion in this regard.

Competence, on the other hand, can be stated as an individual's need to see himself/herself as sufficient in terms of being able to cope with the events that occur in his/her environment or surroundings (Deci et al., 1996). It can be stated that the need for relatedness constitutes the need for social relationships that are satisfying and supportive. People who are aware of their desires and know that they can achieve these desires can establish control over their life practices and organize themselves accordingly. In this context, it can be said that individuals who achieve this have autonomous self-management (Ryan and Deci, 2000).

Self-determination theory advocates two types of motivation and offers suggestions in this direction. These suggestions are both intrinsic and extrinsic motivation. Intrinsic motivation refers to an individual's desire to perform a behaviour that originate from their own psychological needs. When compared to extrinsic motivation, the intrinsic motivation element can be expressed as an individual's desire to participate in the activity in line with their own interests. Extrinsic motivation, on the other hand, refers to the individual's desire to perform the behaviour not for their own desire, but because of external guidance (such as reward or punishment) to achieve a result (Deci and Ryan, 1985). In other words, individuals motivated by external factors do not represent a tool for reaching the goal of their own pleasure (Deci, 1975; Kruglanski, 1978). In this context, accept elements such as the elements in the game, virtual economic unit, power of the player character, and points related to the game as external factors that motivate the player.

Deci and Ryan (1985) mentioned amotivation as a third structure in their model. This concept, which can be defined as a behavior performed without a specific reason, has been likened to a kind of "learned helplessness" (Abramson et al., 1978). Amotivation refers to a situation in which the previously existing internal and external motivating factors no longer exist. Individuals who internalize this situation cannot make sense of the relationship between the actions they perform and the results of these actions. Thus, they continue to perform the activities they include in routine behaviors.

Considering the studies, it has been determined in the literature that the concept of sustainability is the subject of studies with five main gamification functions that serve different purposes in their contexts (Mabalay, 2025). These are: participation, playful experience, motivation, social interaction, and sustainability awareness. This study used the scale developed by Lafrenière et al. (2012) regarding game motivation. Within the framework of the self-determination theory, the concept of game motivation *i* explained by intrinsic motivation, integration, identity inclusion, introjection, external regulation, and amotivation. The reliability and validity of the Turkish form of the player motivation scale was revealed by Akın et al. (2015) in the study titled "Validity and Reliability of the Game Motivation Scale."

As a result of the literature review, it was determined that game motivation is mainly explained with the concept of gamification (Mabalay, 2025). As a result of a bibliometric study in which 324 articles on gamification for sustainability were systematically reviewed until 2023, the potential of gamification to drive sustainable change and achieve Sustainable Development Goals is emphasised (Mabalay, 2025).

In the literature, the effect of gamification on sustainable consumption behaviours reveals the existence of studies on shaping consumer preferences such as reducing food waste, using public transport or cycling, saving energy, ensuring sustainable water consumption, etc. (Kotsopoulos et al., 2018; Albertarelli et al., 2018; Casals et al., 2020; Krath and Von

Korflesch, 2021). However, studies have ignored the satisfaction of individuals in leisure time as a mediating variable. In this context, the study is thought to fill an important gap in the literature. As Koivisto and Hamari (Koivisto and Hamari, 2019) state, more research is needed to understand the long-term effects of gamification on sustainable behaviour change.

1.2. Leisure Satisfaction

When the root of the word "leisure" is examined, it is seen that the English word "leisure" is derived from the Latin word "licere" meaning "to be free" (Cordes and İbrahim, 1996). It can be thought that individuals' desires to establish relationships with other people, belong to a group, and be accepted due to their social life shape their behaviours. Therefore, can be indicated activities carried out in free time contribute to socialization (Tezcan, 1993).

is expressed as the main determining factor regarding the activities performed during free time is the desire to get away from work stress (Demir et al., 2013, p.2). In this context, free time refers to the liberation of individuals by getting rid of work, life difficulties or some responsibilities, in other words, by overcoming certain restrictions (Haller et al., 2013; Hemingway, 1996; Torkildsen, 1999). Therefore, the activities performed during free time may vary from individual to individual. Today, discuss the existence of many factors regarding how individuals evaluate this period. According to Bammel (1996), activities performed by individuals outside of work are based on psychological, sociological, economic, and physical factors.

The level of meeting the needs that individuals determine regarding their free time, which is thought to be their own, can be expressed as free time satisfaction. It is possible to express the perception level formed regarding the completion of conscious or unconscious activities performed in free time or the meeting of expectations reveals free time satisfaction (Demir et al., 2013). Leisure satisfaction of individuals can be affected by many factors. These factors can be expressed as demographic, socio-cultural, psychological, and economic factors (Iso-Ahola and Weissinger, 1990; Siegenthaler and O'Dell, 2000). A literature review shows that free time satisfaction levels are affected by the socio-economic and socio-cultural characteristics of the individual (Iso-Ahola and Weissinger, 1990; Wanget al., 2008). At the same time, it has been stated that the voluntary participation of individuals participating in leisure activities and the level of enjoyment they receive from these activities are also important factors (Lysyk et al., 2002; Ragheb and Beard, 1982).

Leisure satisfaction can be considered as a measure of an individual's ability to spend their free time satisfactorily. Individuals with high leisure satisfaction are more satisfied with their lives and look more positively at their environment. Therefore, leisure satisfaction can have a positive effect on sustainable consumption behaviour. According to Beard and Rahgeb (1980), leisure satisfaction is expressed as the positive perception and emotion gained because the activity participated in this period. Individuals who are satisfied with their leisure activities are expected to continue these activities (Riddick and Stewart, 1994). As a result of the literature review, it was stated that the level of leisure satisfaction increases as individuals regularly participate in free time activities. However, owing to human nature, individuals may also experience boredom and reach satisfaction (Choi and Yoo, 2017; Hribernik and Mussap, 2010; Lee and Zhang, 2010: Serdar et al., 2018). In this context, it can be considered that the actions performed in leisure time have a mediating effect on the

formation of the expected positive situation by achieving individual satisfaction. In this study, by measuring the effect of player motivation level on sustainable consumption behaviour by associating it with leisure time satisfaction, it can be emphasized that the expected positive consumption behaviour can be managed by those concerned by manipulating its reflection on the concept of sustainability if the level of satisfaction obtained from leisure time activities is increased.

In a bibliometric study in which 2649 studies on leisure time in the period covering the years 1929-2022 and 565 studies on leisure time in the period 1955-2022 were analysed in the international literature, the concept of motivation was included among the frequently used keywords, but the concept of sustainable consumption was not found (Bulut et al., 2024). When the studies examining the mediating effect of the concept of leisure satisfaction were examined, it was seen that it was associated with different concepts in different subjects (Montgomery, 2016; Chang et al., 2019; Yu et al., 2024; Terzi et al., 2024; Köse et al., 2025). In this context, this study, which emphasises the relationship between leisure time satisfaction and sustainable consumption, can be considered to fill a gap in the literature.

1.3. Sustainable Consumption Behaviour

Sustainable consumption behaviour can be expressed as consumption behaviour that supports environmental and social sustainability. This behaviour can be summarized as an effort to reduce both resource use, waste, and pollution. Sustainable consumption can provide significant positive outcomes at individual, social, and global levels. In this context, it can be stated that it causes individuals to think about consumption before and during consumption and to rebuild their consumption behaviour patterns based on this phenomenon. In this respect, it can be thought that consumers tend to make decisions that include environmental factors during the purchasing decision stage such as whether to buy or not, which brand to buy, etc. during the purchasing decision stage (Laroche et al., 2010, p.207).

To encourage sustainable consumption, the OECD (2002) established general principles with criteria such as recycling, life cycle, and the use of eco-products in a report published in 2002. In this direction, the OECD recommends and encourages sustainable consumption to be addressed in three dimensions: economic, social, and environmental. The dimensions of sustainable consumption were first used by former Japanese Prime Minister Junichiro Koizumi at the G8 summit in 2004 as at 3R concept (reduce, reuse, and recycle) (Visvanathan and Kumar, 2007).

The concept of sustainable consumption has been defined by some researchers alone (Seyfang, 2006; Hume, 2010; Spaargaren, 2011) and by others together with the concept of sustainable production (Nash, 2009; Clark, 2007; Spangenberg et al., 2010). This is because the concepts of production and consumption are intertwined (Doğan et al. 2015, p.661). Kiracı and Kayabaşı (2010) mentioned the existence of two dimensions of the concept of sustainable consumption. These are called superficial (spurious) sustainable consumption behaviour and real (real) sustainable consumption behaviour. Superficial sustainable consumption behaviour refers to obtaining economic benefits through this consumption behaviour. The main reason for this is the relationship between consumption and production. In contrast, economic benefits are not at the forefront in real sustainable consumption behaviour. Özgül (2010) addressed sustainable consumption in two dimensions tendency to

save and environmental orientation. According to Özgül, the tendency to save is preferred over the tendency to protect the environment directly. It is possible to specify that saving is more effective on sustainable consumption behaviour (Özgül, 2010).

Several studies have been conducted on the concept of sustainable consumption. As the concept of sustainability has been the focus of attention in many different disciplines, the number of studies has increased. In a study, Seyfang (2006, p.324) defined sustainable consumption as a consumption model that meets the basic needs of individuals increases their quality of life, and provides the opportunity for future generations to meet their needs as well as a behavioural pattern in which substances that may harm human and social health are used at a minimum level. Hansen and Schrader (1997, p.459) state that sustainable consumption can be explained by avoiding consumption as much as possible, reducing consumption quantitatively, preferring and consuming ecological products, and paying attention to the fact that at least one of the consumed products is an ecological product.

The concept of sustainability has been frequently studied and analysed by different disciplines in recent years (Pivec and Hsu, 2020; Luger-Bazinger and Hornung-Prähauser, 2021; Douglas and Brauer, 2021; Choi et al., 2022; Chen et al., 2022; Erten et al., 2022; Al-Mulla et al., 2022; Baranyi et al., 2023; Bucchiarone et al., 2023). Between 1996 and 2024, 430 academic articles in the Web of Science database were analysed. When the keywords used in these studies were analysed, it was determined that the concept of purchase intention came to the fore (Üstüner and Canoğlu, 2025). It was stated that the conceptual framework of the sustainability title discussed in these studies consists of concepts such as environmental sustainability, green consumerism, and planned behaviour theory.

The subject of this study is based on the determination of the relationship between game or player motivation and sustainable consumption behaviour. Changes in the life practices of individuals can also be taken into consideration to direct consumption behaviours, which are thought to continue to increase rapidly today, in a positive direction. In this context, the attitudes and behaviours of individuals in their leisure time have also changed, considering the increasing game-playing time or the increase in the number of individuals playing games. Therefore, another factor affecting the consumption phenomenon is player motivations. Another important issue here is the extent to which individuals who play games in their free time reach satisfaction during this time. As a result of the literature review, it was determined that there is a gap in this issue. The main factor that constitutes the fiction of the study is the presence or absence of the role of the mediating variable in the effect of the independent variable on the dependent variable. The effect of an unsatisfied leisure time activity on sustainable consumption may not be understood alone. Therefore, it may be important to consider the nature of the leisure activity, the benefit it provides to the individual, etc., and to determine its effect on the model. After all these statements, whether the player motivation, which is defined as an independent variable, can influence sustainable consumption behaviour was tested with the mediating effect of leisure satisfaction.

2. Research Methods

Player motivation was the independent variable in this study. We measure whether sustainable consumption behaviour, which is the dependent variable of the study, is affected by the player's motivation level. In addition, we measured whether the level of leisure

satisfaction plays a mediating role in this effect. Confirmatory factor analysis (CFA) and Structural Equation Model (SEM) were conducted to test the research model and hypotheses. IBM SPSS 21.0 and IBM SPSS AMOS 24.0 were used to transfer the collected survey data to the computer and conduct the analyses.

In this study, which attempted to measure the effect of player motivations on the sustainable consumption behaviours of consumers and examined the mediating effect of leisure satisfaction, a quantitative research method was preferred to test the research model and hypotheses. The study sample consisted of individuals who played online games, and convenience sampling and snowball sampling were selected as sampling methods. The survey form was shared with participants via Google Doc.

A survey form was used in this study. The participants who participated in the survey were sent a link to the survey form prepared via Google Docs. The information text regarding the voluntary nature of participation in the survey and the ability to withdraw at any time was stated in writing at the beginning of the survey form. Participants have the right to click on the "I approve" or "I do not approve" tabs because of detailed information about the survey study. Participants who approve can proceed to other sections of the survey. Participants who do not approve cannot proceed to other sections.

The survey form used in this study consists of four sections. In the first section, the 'Player Motivation Scale,' which consists of 18 statements and 6 factors is used to measure players motivations for playing online games. The reliability and validity of the Turkish form of the player motivation scale determined by Lafrenière et al. (2012) was revealed in the study titled "Validity and Reliability of the Game Motivation Scale" by Akın et al. (2015). The game motivation variable was explained using the dimensions of intrinsic motivation, integration, identity inclusion, introjection, external regulation, and amotivation. The amotivation dimension was reverse coded because it contained negativity related to the concept. In the second section participants' sense of satisfaction with their free time was measured. In this context, 5 factors and 19 items on the free time satisfaction scale were included. The relevant scale was developed using the 'Free Time Satisfaction Scale' developed by Beard and Raghep (1980). The adaptation of the scale to Turkish and its validity and reliability were presented by Gökçe and Orhan (2011) in a publication titled 'Turkish Validity and Reliability Study of the Leisure Time Satisfaction Scale.' Leisure time satisfaction, the mediator variable of the study, was explained by six factors: psychology, physiology, education, social, relaxation, and aesthetics. Of these factors, the items of the 'Physiology' factor and one item of the 'Aesthetics' factor were excluded from the study since they were not appropriate for the study and were used. In the third section, the 'Sustainable Consumption Behaviour Scale,' which consists of 17 statements, was used to measure participants sustainable consumption behaviour. The sustainable consumption behaviour developed by Doğan et al. (2015) was explained through 17 items with the factors of environmental awareness, non-essential purchasing, savings and reusability. Since the "non-essential purchasing" factor had a negative effect on the variable, it was included in the data set with reverse coding. The last section of the survey included demographic items of the participants. The participants: The items included gender, age group, income level, occupation, average daily time spent playing the game and the three most frequently played games. The items in the scales were rated on a 5-point Likert scale. On the scale, "1-Strongly Disagree" and "5-Strongly Agree."

3. Results

Kurtosis and skewness coefficients were calculated to test the normality assumption regarding the scale items. The literature states that skewness and kurtosis coefficients should be between -3 and +3 (Kline, 2005). When the data set was examined, the kurtosis values (-0.888-0.518) and skewness values (-1.038-0.452) varied between -2 and +2.

Table 1. Cronbach's Alpha Reliability Analysis of Scales

Scale		Cronbach's Alpha
Player Motivation Scale		0.822
	Intrinsic Motivation	0.789
	Integration	0.754
	Incorporating into Identity	0.839
	Introjection	0.805
	External Regulation	0.793
	Amotivation	0.789
Leisure Satisfaction Scale		0.947
	Psychological	0.805
	Educational	0.828
	Social	0.868
	Relaxation	0.902
	Aesthetic	0.941
Sustainable Consumption Behaviour Scale		0.803
	Environmental Awareness	0.890
	Non-Necessary Purchasing	0.871
	Savings	0.880
	Reusability	0.701

Cronbach's alpha was used to test the scales used in the study. A Cronbach's alpha value of 0.7 and above is considered sufficient for the reliability of a measurement tool by Hair et al. (1998). As shown in Table 1, the Cronbach's alpha internal consistency reliability coefficients of the Gaming Motivation Scale, Leisure Satisfaction Scale, and Sustainable Consumption Behaviour Scale sub-dimensions were greater than 0.70. In this context, the scale is reliable.

3.1. Descriptive Statistics

A frequency table was created to determine the gender, age range, income level, occupation, daily average game playing time range, and the three most played game preferences of the participants in the study. As seen in Table 2, 41.1% (n=159) of the participants in the sample were female and 58.9% (n=159) were male.

When the age group range of the participants was examined, it was seen that there were more participants aged 18-24 are more (41.9%) than the other age groups. The smallest age group was 46 years and above, with 9.3% (n=36). When the income level range of the participants was examined, it was observed that the participants had a monthly income of 15,001-20,000 TL with 26.1% (n=101). The smallest number of participants was 30,000 TL and above with 8.5% (n=33). When the occupational groups of participants were examined, it is seen that 23.8% (n=92) were technicians and 3.9% (n=15) were engineers. The percentage of participants belonging to the other occupational groups was 15.2% (n=59). Considering the average daily time spent on digital games, it was found that 35.4% (n=137) spent less than 1 h, and 32.6% (n=126) spent 1-2 h.

In the survey form, the participants were asked to indicate the three games they played the most. Some participants frequently preferred one game, some preferred two games and

others preferred three games. The total number of specified games was 744. 14, and the remaining games were collected under the title of the other. According to the frequency analysis, it was observed that the most frequently preferred game among the named games was PUBG (PlayerUnknown's Battlegrounds) with 16.13% (n=120), followed by 101 Okey Plus with 13.17% (n=98). The descriptive statistical values of the participants are given in table above.

Table 2. Descriptive Statistics

Category	Frequency	PER (%)
Gender	**387**	**100**
Female	159	41.1
Male	228	58.9
Age Range	**387**	**100**
18- 24 old	162	41.9
25- 31 old	89	23.0
32- 38 old	60	15.5
39- 45 old	40	10.3
46 old and up	36	9.3
Income Level	**387**	**100**
Under 10.000 TL	81	20.9
10.001-15.000 TL	56	14.5
15.001-20.000 TL	101	26.1
20.001-25.000 TL	79	19.9
25.001-30.000 TL	39	10.1
Above 30.000 TL	33	8.5
Occupation Group	**387**	**100**
Technician	92	23.8
IT worker	27	7.1
Nurse	11	2.8
Teacher-Academician	52	13.4
Tradesman	20	5.2
Security Personnel	16	4.1
Student	64	16.5
Salesperson	31	8.0
Engineer	15	3.9
Other	59	15.2
Average Daily Game Play Time	**387**	**100**
Less than 1 hour	137	35.4
1-2 hours	126	32.6
2-3 hours	54	14.0
3-4 hours	48	12.3
4-5 hours	15	3.9
More than 5 hours	7	1.8
Frequently Played Games	**744**	**100**
101 Okey Plus	98	13.17
FİFA	16	2.15
PES	21	2.82
PUBG	120	16.13
Call of Duty	18	2.42
League of Legends	77	10.35
Valorant	33	4.44
CS 2	34	4.57
Clash of Clans	24	3.23
Candy Crush	47	6.32
Word Games	26	3.49
Backgammon and Card Games	22	2.96
Farmville	17	2.28
Clash of Royal	20	2.69
Others	171	22.98

3.2. Confirmatory Factor Analyses (CFA)

It is possible to see good and acceptable fit values in the table below. The fit values obtained from the analyses performed in this study must be within the fit value range shown in Table 3.

Table 3. CFA Fit Values

	χ2/df	SRMR	RMSEA	CFI	GFI	TLI	NFI
Good Fit Values	≤3	≤0.05	≤0.05	≥0.95	≥0.95	≥0.95	≥0.95
Acceptable Fit Values	≤4-5	≤0.08	≤0.08	≥0.90	≥0.90	≥0.90	≥0.90

Kaynak: (Hair et al., 1998; Hu and Bentler, 1999; Bentler and Bonett, 1980; McQuitty, 2004; Gürbüz and Şahin, 2016; Kline, 2005; Raykov and Marcoulides, 2006; Schumacker and Lomax, 2004)

3.2.1. Gaming Motivation Scale CFA

CFA was applied to the gaming motivation scale, the validity and reliability of which have been demonstrated by Akın et al. (2015). As a result of the analysis, although CMIN/DF from the goodness of fit values was within acceptable fit values, it was observed that other fit values were below acceptable values. Therefore, the modification indices were examined.

Table 4. Game Motivation Scale CFA Fit Values

	χ2	df	χ2/df	SRMR	RMSEA	CFI	GFI	TLI	NFI
Model Fit Values	501.476	120	4.179	0.072	0.091	0.888	0.876	0.857	0.859
Model Fit Values After Modification	218.670	75	2.916	0.059	0.070	0.945	0.932	0.923	0.920

As a result of the examination, it was suggested by the model that some items belonging to the factors should be removed from the model due to the high correlation coefficient with the items belonging to other factors. In this context, the following items were removed from the external regulation factor: "To win in-game awards and trophies or to increase the levels and experience points of characters/avatars", the integration factor: "Because it suits my personality," and the identity-adding factor: "Because it has personal importance." The model was run again, and the analysis was performed. It was determined that the resulting fit values were within the range of good fit and acceptable fit, as shown in Table 4.

In this context, this model has been validated for measuring gaming motivation. The standardized coefficients of the gaming motivation scale and CFA analysis model are shown in Figure 1.

Figure 1. Gaming Motivation Scale CFA (Standardized Coefficients)

3.2.2. Sustainable Consumption Behaviour Scale CFA

CFA was applied to the sustainable consumption behaviour model created by Doğan et al. (2015) and expressed the dependent variable of the study. As a result of the analysis, although the goodness of fit values of CMIN/DF, RMSEA, CFI and TLI were within acceptable fit values, modification indices were examined because the RMSEA, GFI and NFI values were below acceptable values.

After the examination, the item "I use energy-saving light bulbs at home" belonging to the Savings dimension, was removed from the scale because of its high level of correlation with other factor sub-items. After the removal, the model was repeated.
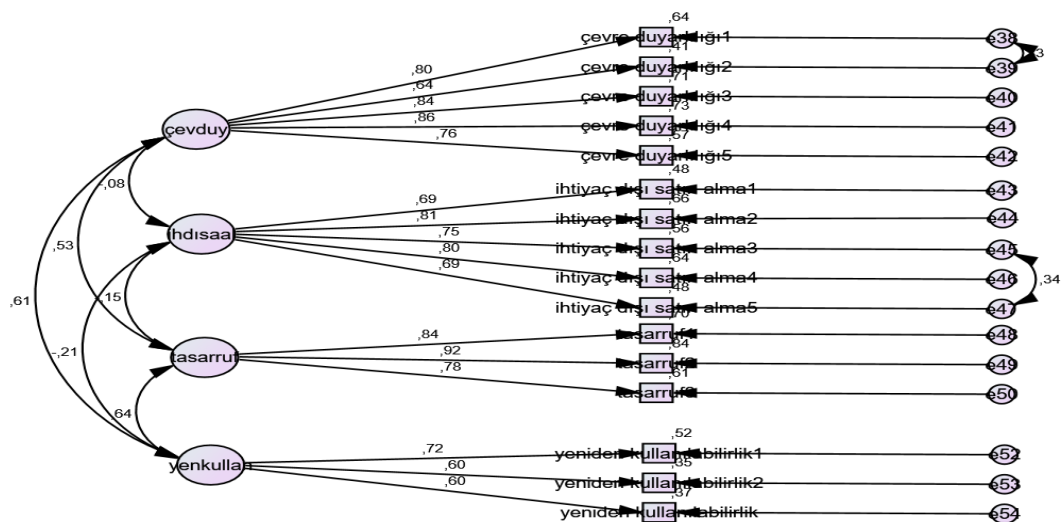
Table 5. Sustainable Consumption Behaviour Scale CFA Fit Values

	χ^2	df	χ2/df	SRMR	RMSEA	CFI	GFI	TLI	NFI
Model Fit Values	397.889	113	3.521	0.053	0.081	0.919	0.892	0.902	0.891
Model Fit Values After Modification	235.756	96	2.456	0.048	0.061	0.956	0.932	0.945	0.929

After analysis, a modification table was created. As a result of the examination, the model suggested covariance links between the error terms e38 and e39 of the environmental sensitivity dimension and e45 and e47 of the non-essential purchase dimension. The model was reanalyzed after covariance links were created. As seen in Table 5, it was determined that the fit values were within the range of good to acceptable fit values.

In this context, this model has been validated to measure sustainable consumption behaviour. The standardized coefficients of the sustainable consumption behaviour scale and the CFA analysis model are shown in Figure 2.

Figure 2. Sustainable Consumption Behaviour Scale CFA (Standardized Coefficients)

3.2.3. Leisure Satisfaction Scale CFA

CFA was applied to the leisure satisfaction model, which was shown to be valid and reliable by Gökçe and Orhan (2011) and represents the mediator variable of the study. As a result of the analysis, all fit values except for SRMR were outside the acceptable fit values.

Therefore, the modification indices of the model were examined. In light of the information provided below, the model was analyzed again after each item was removed or arranged.

Table 6. CFA Fit Values of the Leisure Time Satisfaction Scale

	χ2	df	χ2/df	SRMR	RMSEA	CFI	GFI	TLI	NFI
Model Fit Values	861.637	142	6.068	0.063	0.115	0.875	0.805	0.850	0.855
Model Fit Values After Modification	267.388	77	3.473	0.042	0.079	0.957	0.919	0.941	0.941

After the examination, the items "My free time activities provide me with the opportunity to try new things" and "My free time activities help me get to know myself" from the Educational dimension, "My free time activities give me a sense of accomplishment" from the Psychology dimension, and "I easily engage in free time activities because I like doing them" from the relaxation dimension were removed from the model separately because they had high correlation coefficients with other dimension items.

After removing the items from the model, the model analysis was repeated. According to the modification indices examined after the analysis, it was suggested to establish a covariance connection between the error terms e27 and e28 and e29 and e30 belonging to the social dimension, and between the error terms e31 and e32 belonging to the relaxation dimension. As seen in Table 6, the fit values of the analyzed model because of inference and correction were found to be within the range of good fit and acceptable fit values.
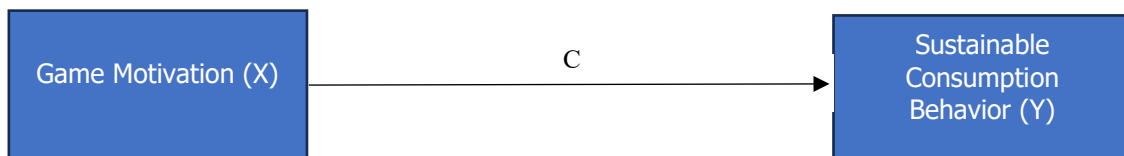
In this context, this model has been validated to measure leisure satisfaction. The standardized coefficients of the leisure satisfaction scale and CFA analysis model are shown in Figure 3.

Figure 3. Leisure Satisfaction Scale CFA (Standardized Coefficients)

3.2.4. The Effect of Gaming Motivation on Sustainable Consumption Behaviour

To test the primary hypothesis of the study (H_1=Gaming motivation has a statistically significant effect on sustainable consumption behaviour), the path diagram created was tested using the IBM AMOS 24 Program. It is possible to see the model of the H_1 hypothesis in Figure 4.

Figure 4. Simple Effects Model of the Study

After testing the level of fit of the data set to the models with the CFA analysis of the measurement models of the independent and dependent variables, the research question was tested using the latent variable structural model. The analysis results for the measurement and structural models are presented in Table 7. According to the SEM results, the effect of game motivation on sustainable consumption behaviour (β_1=0.39; β_2=0.51) was statistically significant (p<0.001).

When the regression table is examined, the amotivation factors of the game motivation variable and the non-essential purchase factors of the sustainable consumption behaviour variable have negative factor loadings. The main reason for this can be attributed to the negative meaning of the relevant dimensions of the variable. However, as seen in the table, the factor with the highest effect on game motivation (0.906) was found to be extrinsic motivation. Extrinsic motivation can be defined as escaping from the real world because it is defined as being able to escape and get rid of a different factor, rather than the benefit obtained from the activity in which the individual participates. In this context, the participants are motivated to play games to separate themselves from negative situations and to purify themselves from the problems they face. The low regression coefficient (0.581) of the intrinsic motivation factor on game motivation also strengthens this situation. Table 7 shows that the factor that has the highest effect on the explanation of sustainable consumption behaviour is reusability (0.893). Therefore, the fact that the item subject to consumption is reusable or suitable for recycling is attributed importance by consumers who play games. It is seen that the factor with the lowest effect (0.243) on sustainable consumption behaviour is the factor of non-essential purchasing. In this context, it was found by the participants that the purchase of products that are not needed has a negative impact on sustainability. Consumption habits reduce the sensitivity of consumers. When the SEM analysis result is examined, it is determined that as the level of game motivation increases, there is an effect (0.392) on sustainable consumption behaviour, and this effect is statistically significant. In this context, players who play games in electronic or digital media should increase their game motivation to manage sustainable consumption behaviour.
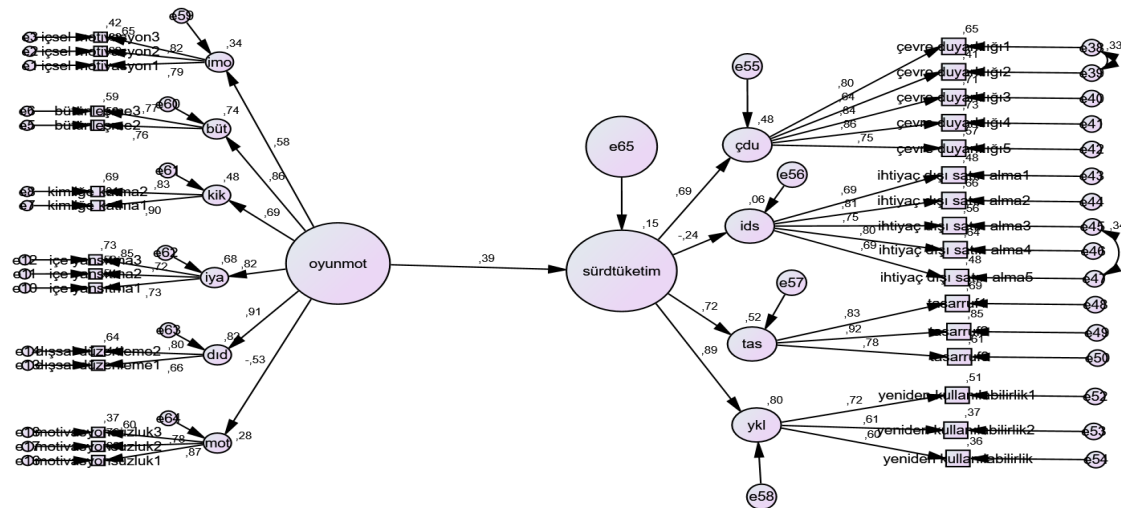
Table 7. Gaming Motivation Sustainable Consumption Behaviour Regression Table

			β_1	β_2	S.E.	C.R.	p-value
Measurement Model							
Intrinsic Motivation	<--	Gaming Motivation	0.581	1			
Integration	<--	Gaming Motivation	0.861	1.487	0.175	8.481	**<0.001**
Incorporating into Identity	<--	Gaming Motivation	0.69	1.438	0.174	8.283	**<0.001**
Introjection	<--	Gaming Motivation	0.822	1.472	0.177	8.321	**<0.001**
External Regulation	<--	Gaming Motivation	0.906	1.499	0.186	8.046	**<0.001**
Amotivation	<--	Gaming Motivation	-0.53	-1.092	0.155	-7.024	**<0.001**
Environmental Consciousness	<--	Sustainable Consumption Behaviour	0.693	1			
Needless Purchasing	<--	Sustainable Consumption Behaviour	-0.243	-0.327	0.089	-3.662	**<0.001**
Savings	<--	Sustainable Consumption Behaviour	0.718	1.225	0.137	8.933	**<0.001**
Reusability	<--	Sustainable Consumption Behaviour	0.893	1.173	0.14	8.406	**<0.001**
YEM							
Sustainable Consumption Behaviour	<--	Sustainable Consumption Behaviour	0.392	0.506	0.1	5.054	**<0.001**

β_1: Standardized coefficients; β_2: Unstandardized coefficients

The primary hypothesis of the study is accepted, as mentioned above, and that the game motivation levels of consumers who play games on digital platforms influence sustainable consumption behaviour. In this context, the path analysis of the study using SEM as shown in Figure 5.

Figure 5. Analysis of the Effect of Gaming Motivation on Sustainable Consumption Behavior

Chi-Square test was performed to determine whether the demographic variables of the participants in the data set significantly differentiate sustainable consumption behaviour in different categories. Through the Chi-Square test (Güngör and Bulut, 2008, p.85), which is used to determine whether there is a significant relationship between categorised variables, an attempt was made to determine whether there is a significant difference between the subgroups of the demographic variable in terms of the effect on the level of the dependent variable. As seen in Table 8, none of the categorised demographic variables has a significant (p>0.05) differentiated effect on the level of sustainable consumption behaviour. In this context, it cannot be stated that there is different sustainable consumer behaviour due to demographic variables. In this respect, the fact that the effect on the dependent variable is explained by the game motivation and the mediating variable of leisure time satisfaction makes a significant contribution.

Table 8. The Effect of Demographic Variables on Differentiation of Sustainable Consumption Behaviour

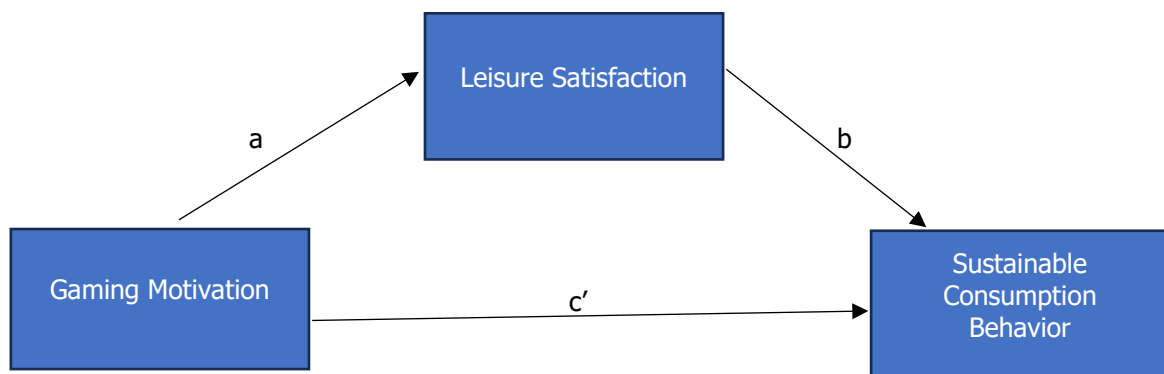|	Chi-Square	df	p-value	Result
Gender	246.313	233	0.26	No significant difference.
Age	976.763	932	0.15	No significant difference.
Occupation	2102.981	2097	0.46	No significant difference.
Daily Play Time	1218.859	1165	0.13	No significant difference.

3.2.5. Mediating Effect of Leisure Satisfaction Level

The mediator variable refers to the causal relationship between an independent variable and a dependent variable, a third variable that is affected by the relevant independent variable and affects the dependent variable (İslamoğlu and Alnıaçık, 2016). Some criteria must be

met to conduct the mediation test, which is statistically analyzed to prove the mediation effect statistically (Baron and Kenny, 1986). The criteria are expressed as follows:

- The independent variable must significantly affect the dependent variable (c path).

- The independent variable must significantly affect the mediator variable (a path).

- When the mediator variable is included in the model in which the independent and dependent variables are included, it must have a significant effect on the dependent variable (path b). In such a case, if there is an insignificant relationship between the independent and dependent variables, it is possible to talk about the existence of a full mediation effect, and if there is a decrease in the relationship coefficient between the independent and dependent variables, talk about the existence of a partial mediation effect (path c').

Figure 6. Model of the Study with Mediator Variable

In this context, we propose the following hypotheses:

- H_2: Gaming motivation has a statistically significant effect on leisure satisfaction.

- H_3: Leisure satisfaction has a statistically significant effect on sustainable consumption behaviour.

- H_4: Leisure satisfaction mediates the relationship between gaming motivation and sustainable consumption behaviour.

When the study is examined holistically, the model is formed as seen in Figure 6. In line with the model suggestion, SPSS AMOS 24 statistical program was used to measure the H_4 hypothesis. It has been suggested that the bootstrap method provides more reliable results than Baron and Kenny's traditional method and the Sobel test (Gürbüz and Şahin, 2016); (Hayes, 2009). 5000 resample option was preferred in the bootstrap analysis. According to the bootstrap results, the standardized effect of gaming motivation on sustainable consumption behaviour through leisure time satisfaction is significant ($\beta=0.343$; BootLLCI=0.062; BootULCI=0.590). The results are presented in Table 9. The lower (BootLLCI) and upper (BootULCI) confidence interval values for determining the mediating effect did not include the value 0 (zero). These results show that leisure satisfaction has a mediating effect on the relationship between gaming motivation and sustainable consumption behavior. Thus, H_4 was supported.

Table 9. Structural Model Analysis Results

Predictor Variables Game Motivation (path c)	Outcome Variables			
	Leisure Satisfaction		Sustainable Consumption Behavior	
	β	SH	β	SH
R2	-	-	0.506*	0.100
Game Motivation (path a)	-	-	0.154	
R2	0.866*	0.103	-	
Game Motivation (path c')	0.666		-	
Leisure Satisfaction (path b)	-		0.074*	0.141
R2	-		0.438*	0.138
Indirect Effect	-		0.227	
Predictor Variables	-		0.343* (0.062-0.590)	

*p<0.001

The total effect of game motivation on sustainable consumption behaviour was statistically significant (β=0.506; p<0.01). In this context, 15.4% of sustainable consumption behaviour is explained by play motivation (R^2=0.154) and the model is significant at 99% confidence interval (p<0.01). In addition, a positive path coefficient was obtained between play motivation and leisure satisfaction (β=0.866; p<0.01), and it was determined that 66.6% of leisure satisfaction was explained by play motivation (R^2=666), and the model was significant at a 99% confidence interval (p<0.01).

As seen in Table 9, the effect of play motivation on sustainable consumption behaviour without a mediating variable (β=0.506) decreased compared to the effect after the mediating variable was included in the model (β=0.074). In this context, it is possible to talk about the mediating effect of leisure satisfaction. As it can be understood from the Bootstrap test, the indirect effect between gaming motivation and sustainable consumption behaviour is 0.343, and the 95% confidence interval is 0.062-0.590, and since this interval does not contain the value 0 (zero), the indirect effect is statistically significant. Within the framework of all findings, leisure satisfaction has a mediating role in the effect of player motivation on sustainable consumption behaviour, and hypothesis H_4 is accepted.

Discussion and Implications

The hypotheses of this study were tested using IBM AMOS 24. Because the data showed a normal distribution, a covariance matrix was created using the Maximum Likelihood calculation method. First, measurement models consisting of game motivation, leisure satisfaction and sustainable consumption behaviour variables were tested. The measurement models were verified by making the necessary corrections with the modification suggestions that emerged from the analysis. After verifying the measurement model, the research hypotheses were tested using a latent variable structural model. First, the H_1 hypothesis was tested, and according to the analysis results, game motivation influenced sustainable consumption behaviour (β_1=0.392; p<0.01). In this context, it was determined that the H_1 hypothesis was accepted.

To test the other hypotheses, a model was created with leisure satisfaction as the mediator variable. The mediated structural model was analyzed and according to the results, gaming motivation influenced leisure satisfaction (β_1=0.816; p<0.01). In this case, H_2 was supported and accepted. However, the mediator variable leisure satisfaction had a significant effect on sustainable consumption behaviour (β_1=0.421; p<0.01). Therefore, H_3 is also accepted.

In the structural model created by including the mediator variable, the path coefficient from game motivation to sustainable consumption behaviour was not statistically significant ($\beta1=$ 0.067; p=0.60). In this context, leisure satisfaction has a full mediating effect between game motivation and sustainable consumption behaviour. Leisure satisfaction, together with game motivation, explained 23% of the change (variance) in sustainable consumption behaviour. As a result of the analysis using the bootstrap method, the total effect of game motivation on sustainable consumption behaviour was found to be statistically significant ($\beta=0.506$; p<0.01). A positive path coefficient was obtained between game motivation and leisure satisfaction ($\beta=0.866$; p<0.01). The indirect effect between game motivation and sustainable consumption behaviour was 0.343 and the 95% confidence interval was 0.062-0.590, and which did not include the value 0 (zero); the indirect effect was found to be statistically significant.

It is seen that the results of the study coincide with the results of the studies in the literature. One of these studies was conducted by Sun and Xing (2023). In the context of the Ant Forest application, the effect of game motivation on sustainable consumption behaviour was tested with SEM. They found that the dimensions of entertainment motivation, social motivation, and achievement motivation positively affect the continuity of use, and the continuity of use increases the level of sustainable consumption behaviour. In another study, Lin et al. (2023) investigated the effect of game elements on customer loyalty and sustainable consumption intention in the context of the Starbucks application. According to the results of the study, game elements increase customer loyalty and perceived sense of fun, which in turn have a positive effect on attitude and behaviour intention. In this context, an increase in intention towards sustainable consumption was determined through game motivation.

According to the study findings, it is possible to specify that player motivation influences sustainable consumption behaviour. It should also be noted that the mediator variable, leisure satisfaction, has a full mediating role in this relationship. In this context, it will be beneficial for sustainability if the researchers, managers, or institutions operating in the field of sustainable consumption behaviour cooperate with game designers. It is useful for game designers or game businesses to realise that they can contribute to the world they live in. For this purpose, if they design games for consumer demands and needs, consumers who will reach leisure time satisfaction will be able to develop attitudes and behaviours that are sensitive to the environment, prioritise saving, can be reused after use, and reduce unnecessary purchasing actions while showing consumption behaviour. In summary, it can be considered that the increasing value of the concept of leisure time in the eyes of consumers and the spending of these time periods by individuals with satisfying activities are factors affecting social output. Therefore, the contribution of the mediating variable of the study to the independent variable will be beneficial in achieving the desired behavioural change in sustainable consumption behaviour when taken into consideration by policy makers, game designers, and marketing employees.

Can be expressed the independent variable that influences sustainable consumption behavior should be evaluated based on the mediator variable. From this point of view, it may be beneficial for some institutions and organisations, which frequently emphasise the concept of sustainability and strive to bring this issue to the forefront with various activities, to add play motivation and leisure time satisfaction activities to the scale of different solutions. They

can direct their sustainability activities with the awareness that the concept of play is not instrumental but a valuable variable of purpose and life. In this context, consumers who achieve satisfaction in their leisure time can achieve peace and happiness with the closure of vital satisfaction receptors. This may lead them to develop an attitude towards sustainability in their consumption behaviours and behave in this direction. For example, instruments such as creating content to raise awareness about sustainable consumption in game design, rewarding activities, using educational elements, demonstrating new undesirable situations for the game that will be created by resource scarcity and resource depletion, etc., can be used. To summarise, these findings can help develop strategies that target player motivation factors and leisure satisfaction to encourage sustainable consumption behaviour. In addition, can be specified this study will shed light on similar studies to be conducted in the field.

The study has some limitations. These limitations can be listed as; the fact that the personal preferences of the players are similar due to the prominence of certain games in the game playing group in the data set, the fact that the game types are not categorised, the lack of a similar study linking game motivation and sustainable consumption behaviour in the domestic literature, and the lack of mediating effect of leisure time satisfaction in this relationship. Within the scope of the limitations of this study and the results of the study, other researchers can be applied to different sample groups (for example, a sample group with a wider demographic scale), model analysis can be performed using a different mediating variable as a mediator variable, games can be categorised within themselves and the sustainable consumption behaviours of participants in qualitatively different game groups can be tested. As a result, this study, which will fill an important gap in the literature because the motivation levels and sustainable consumption behaviour of online gamers in Turkey have not been studied before, and the mediating effect of leisure satisfaction has not been examined, will shed light on other researchers.

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