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Examining The Attitudes of E-Sports Players Towards Artificial Intelligence Techologies*

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A B S T R A C T

This study aimed to examine the attitudes of e-sports participants toward artificial intelligence (AI) based on a variety of socio-demographic variables. A total of 206 e-sports participants selected through convenience sampling were administered the "Attitude Towards Artificial Intelligence Scale" adapted by Kaya et al. (2022). SPSS 29.0.1.0 (171) was used to analyse the data. For data analysis, the Whitney U and Kruskal Wallis tests were utilized. According to the results of the analysis, there was no significant difference in the age variable, whereas the gender variable produced results that favoured male e-sports participants. In addition, it was discovered that individuals who used technological devices during exercise more frequently had a more positive attitude towards AI. In conclusion, men participants have a more optimistic view of artificial intelligence than female participants. These results illustrate the connection between technology usage and perception of artificial intelligence. It can be hypothesized that individuals who frequently use technological devices during exercise are more conversant with technology and, as a result, have a more favourable attitude towards artificial intelligence. These results indicate that technology utilization influences the adoption and acceptance of AI technologies.

Keywords: Artificial Intelligence, E-Sports, Technology and Sports

INTRODUCTION

The rapid development of technology has spawned new innovations in athletics. The proliferation of competitive computer and video games has given rise to the concept of electronic sports (e-Sports) (Kirriemuir, 2021). In the sphere of sports, technological advancement has not only contributed to existing sports but also paved the way for entirely new sports disciplines. In this context, the term e-Sports (electronic sports) has emerged as a novel concept. E-sport competitions are typically held on online platforms or local area networks, and physical movement is not required. This sport brings players from all around the globe together using the opportunities offered by the digital realm, allowing them to compete in a competitive environment (Jenny et al., 2016). E-Sports offer a unique experience compared to traditional sports and introduce a thrilling technological dimension to the world of sports.

LITERATURE REVIEW

E-Sports

The domain of e-Sports incorporates both physical and mental abilities. This sport is played in a virtual or computer environment and has characteristics such as being less expensive in terms of facilities or equipment than traditional sports, being easy to play anywhere in the world, allowing

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for both individual and team participation, and utilizing specialized tools and equipment (Mustafaoğlu, 2018). E-Sports is a sport that requires both physical and mental exertion. E-Sports can be played by people from different parts of the globe over the internet, or by individuals from different regions in major electronic sports competitions. This new sports discipline breaks down boundaries, bringing together players from various cultures and geographies, while requiring e-sports athletes to use their mental skills and hand-eye coordination to develop strategies within the game. In addition, athletes must engage in consistent exercise and training to maintain their physical health and fitness. In addition, both sports offer the opportunity to participate in competitions in both individual and team disciplines (Güler, 2022).

Consequently, e-Sports share similarities with traditional sports while utilizing the technological capabilities of the digital world to provide participants with a new and exciting experience (Argan et al., 2006).

Artificial Intelligence

Artificial Intelligence (AI) is a technology aimed at enabling computer systems to think and perform like humans. AI is the study of enhancing cognitive activities (both requiring and not requiring intellect) performed by natural systems to artificial systems, and even to higher levels of success (Say, 2018). Artificial Intelligence (AI) usage is on the rise, and its impact on various aspects of people's daily existence is growing. AI is utilized in numerous industries and disciplines as a result of rapid technological advancements (Makridakis, 2017; Olhede and Wolfe, 2018). Individuals' attitudes toward AI can significantly influence their adoption of AI (Schepman and Rodway, 2020).

In this context, the Turkish Electronic Sports Federation (TESFED), which was founded in 2023 with the intention of serving as the country's national and international representative, has partnered with the Turkish Artificial Intelligence Initiative SenpAI.GG, which operates globally with the same objective, to provide players with advanced algorithms and statistics. SenpAI.GG is an artificial intelligence-based gaming assistant created by Turkish entrepreneurs and engineers, making it the first native AI technology utilized in the esports industry. The mission of SenpAI.GG is not only to provide language support for players, but also to create a global impact by collaborating with players from all over the globe. SenpAI.GG's intelligent algorithms are demonstrated with an intuitive interface. Through this platform, players can identify areas for personal growth, acknowledge their mistakes, and benefit from videos compiled using SenpAI.GG technology, which include the experiences of professional players from around the globe. In this manner, they can enhance their gaming skills and participate effectively in the competitive gaming scene.

Understanding the attitudes of esports participants toward artificial intelligence is crucial, both for providing more effective services and solutions to the esports industry and for assessing the potential of AI technology in the sports industry. It is believed that the potential of artificial intelligence in esports offers significant advantages, such as enhancing players' tactical abilities, optimizing game strategies, and gaining a competitive edge. Examining the attitudes of esports participants toward artificial intelligence can provide insight into their thoughts and expectations, thereby guiding the application of this technology in the esports industry. In addition, considering esports participants' perspectives on artificial intelligence can help the esports industry develop more successful and efficient AI-based solution development and implementation strategies.

METHOD

This investigation is conducted using a descriptive methodology, the relational survey paradigm. The purpose of this model is to reveal the interrelationships between variables or how variables change in tandem (Karasar, 2018). Using the relational survey model, the study intends to provide a comprehensive comprehension of the factors that influence the subject of the study. Using this methodology, the study will be able to draw conclusions about the intricate relationships between the variables.

Research Group

In this study, data was collected from 206 esports participants selected using the convenience sampling technique. The survey participants were chosen based on their availability and willingness to participate. The scope of this study encompasses esports athletes who engage in professional competitive esports. The aforementioned athletes have developed and specialized talents that are directly relevant to the specific esports in which they participate. Moreover, they are actively involved in structured team-based and league-based settings. We engaged in a collaborative effort with federation authorities to identify possible survey respondents. The data was subsequently gathered via an online survey, specifically administered to professional athletes within the esports industry.

Convenience sampling is a non-probabilistic technique used to collect data from individuals who

are readily accessible during the data collection process; in other words, this convenience accessibility principle is applied until the required sample size is attained (Coşkun et al., 2017).

Data Analysis

The data collected was analyzed utilizing the SPSS 29.0.1.0 (171) software program. Descriptive statistical methods were employed to assess the demographic information of the individuals. The reliability of the Attitudes Toward Artificial Intelligence scale was assessed by the examination of Cronbach's Alpha coefficient values. Following that, a normalcy test was conducted. Non-parametric statistical methods were employed to analyse measurements that had non-normal distribution. The study employed the Kruskal-Wallis and Mann-Whitney U tests to analyze the data, and subsequently, the results were interpreted.

Data Collection Tools

Personal Information Form

The personal information form included inquiries aimed at gathering socio-demographic data from the research participants. These inquiries encompassed age, gender, the use of electronic devices during sporting activities, and the frequency of exercise. The purpose of the age question was to ascertain the age distribution of the participants, with the intention of gaining insights into potential generational disparities in their technological attitudes. Data on gender was gathered in order to examine potential disparities in technology usage in the context of sporting activities. The inquiry into the utilization of technological equipment sought to ascertain the degree to which individuals integrate technology into their physical fitness regimens. Finally, the inquiry regarding exercise frequency sought to assess the participants' comprehensive level of physical activity, which may conceivably impact their utilization of technological equipment during athletic pursuits.

General Attitude towards Artificial Intelligence Scale

The research group's perspectives on artificial intelligence were evaluated using the "General Attitude towards Artificial Intelligence Scale," which was originally established by Schepman and Rodway (2020) and then converted into Turkish by Kaya et al. (2022). Confirmatory Factor Analysis (CFA) was employed to evaluate the structural validity of the scale, while the Cronbach's Alpha Internal Consistency Coefficient was utilized to measure its reliability. The measurement instrument used to assess individuals' views towards artificial intelligence comprises two distinct subscales, namely 'positive attitudes towards artificial intelligence' and 'negative attitudes towards artificial intelligence'. Positive attitudes can be acquired by aggregating the items labeled 1 to 12, whilst negative attitudes can be obtained by summing the ones labeled 13 to 20 after reversing their scoring. The inclusion of reverse-scoring for items 13 to 20 in the assessment guarantees the comprehensive and precise measurement of negative sentiments. The scale consists of a total of 20 items and is administered using a 5-point Likert scale.

Ethics

The Yalova University Human Research Ethics Committee granted ethical permission for this research. The ethical permission was officially obtained on July 20, 2023, under the protocol number 2023/130. The study participants were informed that the utilization of their personal information, research title, and topic matter would be exclusively for scientific purposes. Furthermore, it was explicitly indicated that participants possessed the prerogative to discontinue their involvement in the study at any point in accordance with their own preferences.

Prior to their participation in the trial, all individuals were offered with informed consent. The participants received comprehensive explanations regarding the research objectives and methodology. Furthermore, participants were provided with the assurance that their confidentiality and identity would be rigorously upheld during the entirety of the research endeavour. Prior to expressing their consent to participate, the participants were had sufficient time to inquire about any uncertainties and seek clarification.

RESULTS

Table 1. Kolmogorov-Smirnov Test

	Kolmogorov-Smirnov		
	Statistic	**df**	**Sig.**
AI MEAN	.140	206	0.000

*P<0.005

The statistical analysis of the data using the Kolmogorov-Smirnov test revealed that the data did not exhibit a normal distribution. The statistical significance level was set at p<0.005.

Table 2. Mann-Whitney U Test Results for Gender Variable

Mann-Whitney U	3262.000
Wilcoxon W	5032.000
Z	-2.795
Asymp. Sig. (2-tailed)	0.005

a. Grouping Variable: Gender
*P<0.05

The Mann-Whitney U Test yielded statistically significant results indicating that there was a variation in the overall views towards artificial intelligence among the participants based on their gender. Specifically, this difference was observed among male participants. There exists a disparity in the positive sentiments towards artificial intelligence between men and women, with males generally exhibiting higher levels of positivity.

Table 3. Mann-Whitney U Test Results for the Frequency of Exercising Variable

Mann-Whitney U	3327.500
Wilcoxon W	10230.500
Z	-4.461
Asymp. Sig. (2-tailed)	0.000

a. Grouping Variable: Frequency of exercise
*P<0.05

The Mann-Whitney U test revealed a significant difference between the participants' frequency of exercise and their general attitudes toward artificial intelligence. It was determined that as the frequency of physical activity increases, so does the positive attitude towards artificial intelligence.

Table 4. Kruskal-Wallis Test Results for Age Variable

Test Statistics[a]	**AI MEAN**
Kruskal-Wallis	0.861
Df	2
Asymp. Sig.	0.650

a. Kruskal Wallis Test
a. Grouping Variable: Age
*p>0.05

The Kruskall-Wallis Test revealed no statistically significant difference between the age variable and the general attitude towards artificial intelligence. (P>0.05).

Table 5. Kruskal-Wallis Test Results for the Variable of Using Technological Devices While Doing Sports

Test Statistics[a]	**AI MEAN**
Kruskal-Wallis	72.217
df	2
Asymp. Sig.	0.000

a. Kruskal Wallis Test
b. Grouping Variable: Frequency of using techonological devices when playing sports
*P<0.05

The Kruskal Wallis Test revealed a statistically significant difference between the variable of using technological devices while participating in sports and the attitude towards artificial intelligence. Those who utilize technological devices while participating in sports have a more favorable view of artificial intelligence than those who do not

DISCUSSION

In this study, which sought to examine the attitudes of e-Sports athletes towards artificial intelligence, Mann Whitney-U and Kruskall Wallis Tests were used for the analysis of the collected data. According to the results of the analysis, there was no significant difference in the age variable, whereas the gender variable produced significant results in favor of male e-sports participants. In addition, the frequency of using technological devices while exercising was associated with a more positive attitude towards artificial intelligence.

These results indicate that men participants have a more optimistic view of artificial intelligence than their female counterparts. It also emphasizes the relationship between the use of technology and the perception of artificial intelligence. It can be hypothesized that individuals who frequently use technological devices during exercise are more conversant with technology and, as a result, have a more favourable attitude toward artificial intelligence. These findings emphasize the significance of technology usage as a significant factor in the acceptance and adoption of artificial intelligence technologies. This contributes to our comprehension of the factors that influence the opinions of e-Sports athletes and sports consumers in general regarding artificial intelligence. According to research on gender differences in technology usage and attitudes (Rosen et al., 2013; Lozano et al., 2021), male participants have a more optimistic view of artificial intelligence than their female counterparts. Studies on trust in AI (Yakar et al., 2022) and perception levels regarding artificial intelligence applications (Khalf et al., 2022) also support the relationship between technology usage and the perception of artificial intelligence. These results suggest that societal factors and gender biases may influence how people perceive and interact with artificial intelligence. It is essential to address these disparities and work toward creating a more inclusive and equitable environment for the development and deployment of AI technologies. In addition, additional research is required to investigate the specific causes of these gender differences and to identify methods for bridging the divide in perceptions and attitudes towards AI.

The current era is characterized by the rapid consumption of what is produced, the rapid adoption of discoveries, and a heightened interest in new and different things, which is frequently motivated by a desire to be popular. Individuals' requirements, curiosities, and pursuits of satisfaction have served as the foundation for exploration and innovation throughout human history. AI is currently one of the most significant initiatives (Aydın and Değirmenci, 2018), comparable to the importance of the discovery of fire in the past.

Rapidly advancing technology is widely adopted by societies in the modern world, and this process of adoption is causing profound changes in the field of sports. It is believed that the rapid advancement of technology, specifically the use of Artificial Intelligence (AI) in sports, presents new and thrilling opportunities (Atasoy et al., 2021).

In 2017, the global market for digital games generated revenues of $109 billion. This figure represents a substantial increase in the digital gaming market's revenue, which was approximately $70 billion in 2012 and has increased by 56% over the past five years. This growth can be attributed not only to the introduction of new customer-entertainment techniques by gaming companies, but also to their adoption of new commercial business models in the digital age. Many games provide entertainment on three distinct levels: participating, observing, and creating. As a result, gaming companies are rapidly transforming into entertainment businesses. Games are distorting the lines between traditional industries such as media, telecommunications, and sports, attracting interest in new partnerships, mergers, and acquisitions (NewZoo, 2017).

In games such as PUBG and League of Legends, big data is used for significant processes, such as matching players and teams based on their abilities, storing, and analyzing game and player data, and generating online statistics. The purpose of these processes is to create personalized and authentic gaming experiences. In addition, realistic simulations are utilized in games such as FIFA and NBA to construct characters, fields, and items that closely resemble reality (Çağlayan and Uygur, 2022).

In addition to these advancements, the e-sports industry increasingly employs artificial intelligence (AI) technologies. AI is utilized for a variety of crucial duties, such as analyzing player behavior, optimizing in-game decisions, and providing players with personalized recommendations. As a result, the e-sports industry is becoming increasingly competitive, entertaining, and engrossing. AI is

becoming a significant factor that will influence the future of e-sports by enriching and enhancing the gaming experience. Additionally, the impact of AI may vary depending on e-sports branches. But overall, there are many application areas where AI can assist athletes across the training and development spectrum and improve the performance of teams. Artificial intelligence has the potential to improve individual and team performance, but this depends on how players and teams use it.

New technologies such as AI have had a substantial impact on the expansion and development of the digital gaming industry. Here are some relevant considerations:

- Personalized Experiences: AI aids game developers in comprehending player preferences and play patterns, allowing games to provide more personalized experiences. For instance, games can alter enemy difficulty or recommend in-game content based on the player's skills and preferences.

- Player Behavior Analysis: AI can analyze player behaviors in order to improve the gaming experience. Understanding where players may be getting stuck in certain sections or struggling to complete specific duties can be used to optimize game design.

- Creative Games: Artificial intelligence can assist game designers in developing inventive game mechanics and narratives. For instance, games can create narratives that are more complex and dynamic, or they can include systems that recognize players' creative concepts.

- AI Difficult and intelligent opponents: AI that provides players with more difficult and intelligent opponents contributes to the competitiveness and enjoyment of video games. This encourages players to utilize additional strategies and enhances the engagement of games.

- Game Development Process AI can accelerate and simplify the game development process. Specifically, the use of autonomous AI characters during game testing makes it simpler to detect and correct imbalances.

These considerations highlight the importance of artificial intelligence in shaping the digital gaming industry by enhancing user experiences, fostering creativity, and enhancing development processes.

In this context, artificial intelligence is crucial to the digital gaming industry because it can make games more immersive, interactive, and individualized. This technology not only provides game developers with new opportunities, but also enhances the player experience. Therefore, artificial intelligence has contributed significantly to the expansion and development of the digital gaming industry.

Their approach to technology and in-game AI is determined by how they feel about artificial intelligence. A positive outlook suggests that e-sports participants can utilize artificial intelligence to enhance their strategies, comprehension of the game, and performance. A positive outlook can assist e-sports players in utilizing artificial intelligence to obtain a competitive advantage over their opponents and enhance the gaming experience. A negative attitude, on the other hand, may entail biases and concerns regarding artificial intelligence. Concerned that artificial intelligence may negatively impact the gaming experience or upset the competitive balance, E-sports participants may reject or avoid using the technology.

Consequently, the attitudes of e-sports participants toward artificial intelligence are a crucial factor that can influence the gaming experience and competitive performance. For future success and growth, the e-sports industry should prioritize this relationship by integrating artificial intelligence technology according to the requirements of players and promoting a positive attitude. Additionally, it is essential to educate and enlighten e-sports players about artificial intelligence in order to help them understand and implement it.

RECOMMENDATIONS

This study is essential for comprehending the relationship between e-Sports players and artificial intelligence and for highlighting the potential of this field. The findings can aid in tailoring solutions to the requirements of e-sports players and propelling the e-sports industry forward.

The e-Sports industry is a sector that is continuously expanding and changing. Understanding the attitudes of e-sports players toward artificial intelligence can help the industry evaluate its potential and provide better services to meet the requirements of players.

AI based data analysis can assist e-sports players in analyzing rival teams and individuals. These analyses can provide valuable insight into the game strategies and performances of opponents. Based on this information, teams and athletes can gain greater insight into their opponents, make more informed decisions, and better prepare for matches.

An e-Sports team can obtain a competitive advantage by utilizing an analysis and training tool based on artificial intelligence. This tool can analyze

the game performance of the team, process data to determine game strategies, and identify the team's assets and weaknesses. Therefore, the team can perform more effectively and strategically than its competitors.

E-Sports participants can gain a competitive edge using solutions based on artificial intelligence. This study can serve as a guide for enhancing competitiveness by incorporating the perspectives and expectations of e-sports participants regarding artificial intelligence technology.

LIMITATION AND FUTURE STUDIES

The sample size and composition of the study were relatively limited, concentrating on a particular age group and level of esports participation. As a result, the findings may not provide a complete picture of attitudes toward AI in the e-Sports community. Future research efforts should prioritize larger and more diverse samples to capture a more comprehensive perspective on AI-related attitudes in e-Sports. This may entail diversifying the age groups, experience levels, and backgrounds of esports enthusiasts and professionals included in the study.

Ethical Approval

For this type of study, formal consent is not required.

REFERENCES

Argan, M., Özer, A., & Akın, E. (2006). Elektronik spor: Türkiye'deki siber sporcuların tutum ve davranışları. Spor Yönetimi ve Bilgi Teknolojileri Dergisi, 1(2), 1-11.

Atasoy, B., Efe, M., & Tutal, V. (2021). Towards the artificial intelligence management in sports. International Journal of Sport Exercise and Training Sciences - IJSETS, 7(3), 100-113. DOI: 10.18826/useeabd.845994.

Aydın, İ. H., & Değirmenci, C. H. (2018). Yapay Zekâ. İstanbul: Girdap Yayınları.

Çağlayan, M. N., & Uygur, A. (2022). Endüstri 4.0 ve Bileşenlerinin E-Spor Üzerindeki Etkileri. Journal of Tourism Intelligence and Smartness, 5(2), 101-111.

Coşkun, R., Altunışık, R., & Yıldırım, E. (2017). Sosyal bilimlerde araştırma yöntemleri SPSS uygulamalı. Sakarya Kitabevi.

Dumangöz, P. D. (2022). Covid-19 and youth sports: Psychological, developmental and economic impacts. Routledge Taylor & Francis Group. London.

EGDF (European Games Developer Federation). (2016). How to enable digital growth in Europe? European Games Developer Federation. Helsinki.

Jenny, S. E., Manning, R. D., Keiper, M. C., & Olrich, T. W. (2016). Vitual(ly) athletes: Where eports fit within the definition of ''Sport''. Quest. http://dx.doi.org/10.1080/00336297.2016.1144517.

Karasar, N. (2018). Bilimsel araştırma yöntemi kavramlar ilkeler teknikler. Nobel Yayınevi.

Kaya, F., Aydin, F., Schepman, A., Rodway, P., Yetişensoy, O., & Demir-Kaya, M. (2022). The roles of personality traits, al anxiety, and demographic factors in attitudes toward artificial intelligence. International Journal of Human–Computer Interaction, 1-18. https://doi.org/10.1080/10447318.2022.2151730.

Kirriemuir, J. (2002). Video gaming, education and digital learning technologies. D-lib Magazine, 8(2), 1-12.

Makridakis, S. (2017). The forthcoming Artificial Intelligence (AI) revolution: Its impact on society and firms. Futures, 90, 46-60.

Olhede, S. C., & Wolfe, P. J. (2018). The growing ubiquity of algorithms in society: implications, impacts and innovations. Philosophical Transactions of the Royal Society A: Mathematical, Physical and Engineering Sciences, 376(2128), 20170364.

Say, C. (2018). 50 Soruda Yapay Zeka. 7 Renk Basım Yayın ve Filmcilik Ltd. Şti, İstanbul.

Schepman, A., & Rodway, P. (2020). Initial validation of the general attitudes towards Artificial Intelligence Scale. Computers in Human Behavior Reports (1), 100014. https://doi.org/10.1016/j.chbr.2020.100014.

TESFED (2023). http://tesfed.gov.tr/haberler/turkiye-de-espora-yapay-zeka-destegi. Date of Access: 1.09.2023.

Mustafaoğlu, R. (2018). e-Spor, Spor ve Fiziksel Aktivite. Ulusal Spor Bilimleri Dergisi, 2(2), 84-96. DOI: 10.30769/usbd.457545.

Newzoo. (2017). 2017 Global Games Market Report - Trends, Insights and Projections Toward 2020. Access Address: https://resources.newzoo.com/hubfs/Reports/Newzoo_Global_Games_Market_Report_2017_Light.pdf?t=1517584881031.

Lozano, I., Molina, J., & Gijón, C. (2021). Perception of artificial intelligence in spain. Telematics and Informatics, 63, 101672. https://doi.org/10.1016/j.tele.2021.101672.

Rosen, L., Whaling, K., Carrier, L., Cheever, N., & Rokkum, J. (2013). The media and technology usage and attitudes scale: an empirical investigation. Computers in Human Behavior, 29(6), 2501-2511. https://doi.org/10.1016/j.chb.2013.06.006.

Yakar, D., Ongena, Y., Kwee, T., & Haan, M. (2022).
Do people favor artificial intelligence.