

The Relationship Between General Attitudes of Sports Managers in Fitness Centers Towards Artificial Intelligence and Their Intrinsic Motivation: The Case of the Marmara Region

Can NAKİP

Ministry of National Education, Basic Education Unit.

can_nakip@hotmail.com

KEYWORDS	ABSTRACT
Artificial intelligence, attitude, intrinsic motivation	This study aims to examine the relationship between the general attitudes of sports managers in fitness centers towards artificial intelligence and their intrinsic motivation. The research was conducted using the relational survey model. A total of 394 participants, including 133 women and 264 men, were voluntarily selected using the convenience sampling method among sports managers working in fitness centers in the Marmara Region. The data for the study were collected using the "General Attitude Towards Artificial Intelligence Scale", developed by Schepman and Rodway (2020) and adapted into Turkish by Kaya et al. (2022), the "Intrinsic Motivation Scale for Employees", developed by Bardak and Nihal (2023), and a "Personal Information Form". For data analysis, t-tests, ANOVA, and Pearson correlation analysis techniques were used. The findings revealed that attitudes towards artificial intelligence showed significant differences based on gender, marital status, age, education level, and income level, whereas intrinsic motivation only showed a significant difference in relation to age. No significant differences were found in intrinsic motivation concerning other demographic variables. Additionally, a low-level negative significant relationship was identified between attitudes towards artificial intelligence and intrinsic motivation. As a result, it can be stated that intrinsic motivation negatively influences attitudes towards artificial intelligence, albeit at a low level.

1. Introduction

Since the last quarter of the 20th century, the use of artificial intelligence has rapidly expanded across various fields. This phenomenon has raised questions about the impact of artificial intelligence on management and managers, as well as how and to what extent this technology can be utilized.

The shift of societies toward industrial labor, in other words, the Industrial Revolution, has led to significant advancements in economic, social, political, and cultural domains. The integration of steam power, electricity, and petroleum into production processes, along with the incorporation of automation and digitalization concepts, has initiated a process of social

transformation. The widespread adoption of automation has increased production efficiency and expanded the scope of information and trade in the digitalized world. In today's world, where the concepts of space and time have nearly disappeared, modern automation systems, production technologies, data exchanges, and cyber-physical systems have come to the forefront (Ersöz & Gökmen, 2023). Globally, significant technological transformations have occurred due to major developments in internet technologies, including robots, artificial intelligence, sensors, the Internet of Things, industrial manufacturing, cloud computing, and augmented reality (Ersöz & Özmen, 2020).

In recent years, with the advancement of Industry 4.0 technologies, human-like qualities have increasingly been attributed to technologies. In this context, the concept of "smart technologies" has gained prominence. However, defining a technology as "smart" or "intelligent" has sparked debates regarding not only the definition of human intelligence but also the understanding of machine intelligence (Kaya, 2024).

Although the concept of artificial intelligence is rooted in early ideas and theories from the past, it began to develop concretely after the 1950s. Today, artificial intelligence has become one of the most extensively researched and focused-on fields (Korucu & Biçer, 2022). The term "artificial intelligence" was first introduced by John McCarthy in a speech at Dartmouth College in 1956 (Buchanan, 2005). McCarthy (2007) described artificial intelligence as a field of science and engineering dedicated to creating intelligent machines. He established the Stanford Artificial Intelligence Laboratory and continued his research on artificial intelligence until his passing in 2011 (Kaya, 2024).

Artificial intelligence has been developed to solve complex problems, make decisions, analyze data, and possess learning capabilities through computer programs and algorithms. This technology is defined as a digital system and/or application capable of mimicking human behavior, interacting, learning, adapting, and improving its applications based on experience (Tamer & Övgün, 2020). While there are reasons for individuals to use artificial intelligence, the formation of these reasons is another topic that deserves attention.

Motivation can be defined as an internal force that influences individuals' behaviors, prompts them to take action, drives them toward concrete actions, and makes them willing to pursue a particular course of action (Yardim, 2017). Motivation, as a multidimensional concept, is examined under two main categories: intrinsic and extrinsic motivation. While intrinsic motivation originates from the activity itself, extrinsic motivation arises from rewards and external expectations (Cho & Perry, 2012).

The primary focus here is the intrinsic dimension of motivation. Intrinsic motivation is a set of responses that emerge in relation to an individual's lifelong needs (Selçuk, 1996). It is considered the most powerful form of motivation. When a person is intrinsically motivated, they derive genuine enjoyment from the action they perform (Martela & Jarenko, 2014). Indeed, intrinsic motivation refers to an individual's efforts to achieve goals determined by their own needs, the sense of fulfillment, independence, and happiness they experience upon achieving these goals, and the satisfaction derived from the activities they engage in (Akbaba, 2000).

Dörnyei and Ushioda (2011) emphasized that regardless of how high an individual's qualifications, competencies, and abilities may be, strong intrinsic motivation is essential for

achieving their goals. This high level of motivation is crucial for ensuring continuity in an individual's endeavors.

Individuals who are intrinsically motivated do not require external rewards or environmental factors; their only true reward is intrinsic satisfaction (Deci & Ryan, 1980). These individuals seek no rewards other than the experience gained from their actions and the accompanying elements. Their actions are carried out voluntarily, in line with their personal interests, and driven by the pursuit of personal satisfaction and fulfillment. In other words, intrinsic motivation refers to an individual's tendency to engage in an activity purely for enjoyment, without expecting or seeking external rewards (Lepper et al., 1996).

Intrinsic motivation is closely linked to curiosity, interest, engagement, and positive challenges. People engage in such activities because they find them meaningful and perceive them as having the potential for sustainable continuity (Filimonov, 2017). It is, in a sense, a person's ability to self-motivate. Individuals with high intrinsic motivation possess an internal desire to achieve success (Nicholls & Robert, 1992).

Intrinsic motivation also holds significance in enhancing creativity by increasing positive emotions, cognitive flexibility, willingness to take risks, and perseverance (Grant & Berry, 2011). When combined with intrinsic motivation, these psychological states have the potential to foster creative engagement. Through these psychological conditions, employees can spontaneously consider various task parameters and develop more creative, and even risk-taking, solutions. Consequently, they can explore new ways to address fundamental problems through strong and in-depth involvement (Mainemelis et al., 2015).

In this context, artificial intelligence has gained significant demand across various industries due to its accessibility and practicality. One of these industries is the sports sector, specifically fitness centers. The perspectives of sports managers in fitness centers toward artificial intelligence raise questions about the extent to which this technology influences their work. However, another crucial factor that should not be overlooked is motivation. Humans are influenced by positive or negative conditioning, meaning that their actions are often driven by their motivational state. From this perspective, examining the relationship between the general attitudes of sports managers in fitness centers toward artificial intelligence and their intrinsic motivation holds significant importance.

2. Methodology

Research Model

This study, which examines the relationship between the general attitudes of sports managers in fitness centers toward artificial intelligence and their intrinsic motivation, employs a relational survey model. This model is used "to determine the relationships between two or more variables and to obtain clues about cause-and-effect relationships" (Büyüköztürk et al., 2023).

Research Group

In the study, a total of 397 voluntary individuals participated, consisting of 133 women and 264 men, who were selected using the convenience sampling method and were working as managers in fitness centers located in eleven different provinces in the Marmara Region of

Turkey. The convenience sampling method has been described as "the quickest and most cost-effective way to obtain data" (Karagöz, 2017). Descriptive statistical results regarding the research group are presented in Table 1.

Table 1. Descriptive Statistical Results of Participants

Gender	n	%
Famale	133	33,5
Male	264	66,5
Marital Status	n	%
Single	186	46,9
Married	211	53,1
Age	n	%
25-30 age	16	4,0
31-35 age	82	20,7
36-40 age	174	43,8
41-45 age	89	22,4
46-50 age	36	9,1
Education Level	n	%
High School	12	3,0
Associate & Bachelor's Degree	357	89,9
Postgraduate	28	7,1
Income Level	n	%
20.000 tl-40.000 tl	91	22,9
40.001 tl-60.000 tl	157	39,5
60.001 ve üzeri	149	37,5
Total	397	100,0

According to the results in Table 1, it was determined that 33.5% (n=133) of the participants were female, while 66.5% (n=264) were male; 46.9% (n=186) were single, while 53.1% (n=211) were married; 4.0% (n=16) were between the ages of 25-30, 20.7% (n=82) were between 31-35, 43.8% (n=174) were between 36-40, 22.4% (n=89) were between 41-45, and 9.1% (n=36) were between 46-50. Additionally, 3.0% (n=12) had a high school education, 89.9% (n=357) had an associate or bachelor's degree, and 7.1% (n=28) had a postgraduate education. In terms of income level, 22.9% (n=91) earned between 20,000 and 40,000 TL, 39.5% (n=157) earned between 40,001 and 60,000 TL, and 37.5% (n=149) had an income of 60,001 TL or more.

Data Collection Tools

In this study, data were collected from participants using the "General Attitude Towards Artificial Intelligence Scale," the "Intrinsic Motivation Scale for Employees," and a "Personal Information Form."

General Attitude Towards Artificial Intelligence Scale: This scale was developed by Schepman and Rodway (2020) and adapted into Turkish by Kaya et al. (2022). It consists of 20 items in a 5-point Likert scale format, where responses range from "1 – strongly disagree" to "5 – strongly agree." The scale is divided into two sub-dimensions: Positive Attitudes Towards Artificial Intelligence: Minimum .12, maximum .60. Negative Attitudes Towards Artificial Intelligence: Minimum .8 , maximum .40. The Cronbach's alpha reliability coefficient of the scale was determined to be .88.

Intrinsic Motivation Scale for Employees

This scale was developed by Bardak and Nihal (2023) and consists of 21 items categorized into five dimensions: Benefit, belief, perceived competence, negative affect, and pleasure/interest. The scale follows a 5-point Likert format with responses ranging from "1 – strongly disagree" to "5 – completely agree." The internal consistency coefficient of the scale was found to be .81.

Personal Information Form

To determine certain demographic characteristics of the participants, a set of questions was included in the survey. The form consisted of five questions related to gender, marital status, age, education level, and income level.

Data Collection Process

Before collecting the data, ethical approval (2024/13) was obtained from Istanbul Aydın University Ethics Committee. Following the completion of the approval process, data were collected electronically via Google Forms.

Data Analysis

After examining and numerically coding the data obtained from the participants, the data were transferred to a computer and then uploaded to the SPSS software. In the analysis of the data, descriptive statistics were first calculated, and the reliability of the measurement tools was assessed using the Cronbach's alpha coefficient. To compare two groups, an independent samples t-test was conducted, while a one-way analysis of variance (ANOVA) was applied for comparisons involving more than two groups. Pearson correlation analysis was used to examine the relationships between variables. All analyses were performed using the SPSS 25.0 software package, and the level of statistical significance was set at $p < .05$.

Table 2. Results of Measurement Tools

Scales	Skewness	Kurtosis	Cronbach Alpha
Positive Attitude	-,487	-,511	,930
Negative Attitude	,559	1,325	,891
Intrinsic Motivation	-1,203	1,532	,700

The results in Table 2 indicate that the skewness and kurtosis values of the measurement tools fall within the ± 2 range, which is considered to be within a normal distribution (George and

Mallery, 2019, pp. 114-115). Additionally, the Cronbach's alpha reliability coefficients of the measurement tools were determined to be highly reliable according to Karagöz (2017, p. 26).

3. Findings

Table 3. Comparison of Attitudes Towards Artificial Intelligence and Intrinsic Motivation by Gender

	Gender	n	X	Ss.	t	p
Positive Attitude	Famale	133	4,17	,58	2,459	,020
	Male	264	4,01	,69		
Negative Attitude	Famale	133	2,98	,70	,725	,469
	Male	264	2,92	,70		
Intrinsic Motivation	Famale	133	104,77	4,44	-,781	,435
	Male	264	105,14	4,52		

The independent samples t-test results in Table 3 indicate a significant difference in participants' positive attitudes towards artificial intelligence based on gender ($t=2.459$; $p=0.020$). On the other hand, the results show no significant difference in participants' negative attitudes towards artificial intelligence ($t=-0.781$; $p=0.469$) and intrinsic motivation ($t=-0.781$; $p=0.435$) based on gender.

Table 4. Comparison of Attitudes Towards Artificial Intelligence and Intrinsic Motivation by Marital Status

	Marital Status	n	X	Ss.	t	p
Positive Attitude	Single	186	4,09	,63	,780	,436
	Married	211	4,04	,69		
Negative Attitude	Single	186	2,85	,71	-2,491	,013
	Married	211	3,02	,69		
Intrinsic Motivation	Single	186	104,62	4,84	-1,657	,098
	Married	211	105,36	4,14		

The independent samples t-test results in Table 4 indicate a significant difference in participants' negative attitudes towards artificial intelligence based on marital status ($t=-2.491$; $p=0.013$). On the other hand, the results show no significant difference in participants' positive attitudes towards artificial intelligence ($t=0.780$; $p=0.436$) and intrinsic motivation ($t=-1.657$; $p=0.098$) based on marital status.

Table 5. Comparison of Attitudes Towards Artificial Intelligence and Intrinsic Motivation by Age

Age	n	X	Ss.	F	p	Difference
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Positive Attitude	25-30 age ^a	16	3,75	,88	3,810	,005	c>e
	31-35age ^b	82	4,05	,59			
	36-40 age ^c	174	4,18	,56			
	41-45age ^d	89	4,00	,72			
	46-50 age ^e	36	3,82	,85			
Negative Attitude	25-30 age ^a	16	2,34	,85	6,331	,000	c,d>a e>a,b,c
	31-35age ^b	82	2,87	,59			
	36-40 age ^c	174	2,91	,69			
	41-45age ^d	89	3,02	,71			
	46-50 age ^e	36	3,32	,72			
Intrinsic Motivation	25-30 age ^a	16	100,44	7,57	5,041	,001	b,c,d,e>a
	31-35age ^b	82	105,76	3,76			
	36-40 age ^c	174	104,91	4,67			
	41-45age ^d	89	105,22	3,95			
	46-50 age ^e	36	105,36	3,56			

The results of the one-way variance (ANOVA) analysis presented in Table 5 indicate that participants' scores on positive attitude towards artificial intelligence ($F=3.810$; $p=0.005$), negative attitude ($F=6.331$; $p=0.000$), and intrinsic motivation ($F=5.041$; $p=0.001$) show a statistically significant difference based on age. According to the Post Hoc (Scheffe) test results conducted to determine the source of this difference, it was found that in terms of positive attitude, the mean scores of participants aged 36-40 were significantly higher than those in the 46-50 age group. Regarding negative attitude, the mean scores of participants aged 36-40 and 41-45 were significantly higher than those aged 25-30, while the mean scores of participants aged 46-50 were significantly higher than those in the 25-30, 31-35, and 36-40 age groups. In terms of intrinsic motivation, the mean scores of participants aged 31-35, 36-40, 41-45, and 46-50 were found to be significantly higher than those in the 25-30 age group.

Table 6. Comparison Results of Attitudes Towards Artificial Intelligence and Intrinsic Motivation Based on Educational Status

	Educational Status	n	X	Ss.	F	p	Difference
Positive Attitude	High School ^a	12	3,68	,98	6,856	,001	c>a,b
	Associate & Bachelor's Degree ^b	357	4,05	,65			
	Postgraduate ^c	28	4,44	,52			
Negative Attitude	High School ^a	12	3,08	,95	3,742	,025	b>c
	Associate & Bachelor's Degree ^b	357	2,96	,67			
	Postgraduate ^c	28	2,60	,89			
Intrinsic Motivation	High School ^a	12	103,42	4,12	1,758	,174	
	Associate & Bachelor's Degree ^b	357	105,15	4,43			

Postgraduate ^c	28	103,93	5,26
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The results of the one-way variance (ANOVA) analysis presented in Table 6 indicate that participants' scores on positive attitude towards artificial intelligence ($F=6.856$; $p=0.001$) and negative attitude ($F=3.742$; $p=0.025$) show a statistically significant difference based on educational status. According to the Post Hoc (Scheffe) test results conducted to determine the source of this difference, it was found that in terms of positive attitude, the mean scores of participants with postgraduate education were significantly higher than those with high school, associate, and undergraduate education. Regarding negative attitude, the mean scores of participants with associate and undergraduate education were significantly higher than those with postgraduate education. On the other hand, the results indicate that there is no statistically significant difference in intrinsic motivation scores ($t=1.758$; $p=0.174$) based on educational status.

Table 7. Comparison Results of Attitudes Towards Artificial Intelligence and Intrinsic Motivation Based on Income Status

	Edicational Status	n	X	Ss.	F	p	Difference
Positive Attitude	20.000 tl-40.000 tl ^a	91	3,71	,55	21,878	,000	b,c>a
	40.001 tl-60.000 tl ^b	157	4,08	,65			
	60.001 and above ^c	149	4,26	,65			
Negative Attitude	20.000 tl-40.000 tl ^a	91	2,83	,51	1,686	,187	
	40.001 tl-60.000 tl ^b	157	3,00	,68			
	60.001 and above ^c	149	2,95	,82			
Intrinsic Motivation	20.000 tl-40.000 tl ^a	91	105,80	4,89	1,831	,162	
	40.001 tl-60.000 tl ^b	157	104,82	4,64			
	60.001 and above ^c	149	104,74	4,03			

The results of the one-way variance (ANOVA) analysis presented in Table 7 indicate that participants' scores on positive attitude towards artificial intelligence ($F=21.871$; $p=0.000$) show a statistically significant difference based on income status. According to the Post Hoc (Scheffe) test results conducted to determine the source of this difference, it was found that the scores of participants with an income of 40,001 TL to 60,000 TL and those with an income of 60,001 TL and above were significantly higher than those with an income between 20,000 TL and 40,000 TL. On the other hand, the results indicate that there is no statistically significant difference in negative attitude scores ($F=1.686$; $p=0.187$) and intrinsic motivation scores ($t=1.831$; $p=0.162$) based on income status.

Table 8. Results of the Relationship Between Attitudes Towards Artificial Intelligence and Intrinsic Motivation

	Intrinsic Motivation
Positive	r -,122*

Attitude	p	,015
Negative	r	-,004
Attitude	p	,936

The results of the Pearson correlation analysis presented in Table 8 indicate that there is a low-level significant negative relationship between positive attitude and intrinsic motivation ($r=-0.122$; $p=0.015$).

4. Discussion, Conclusion and Recommendations

This section aims to examine and interpret the relationship between the general attitudes of sports managers in fitness centers toward artificial intelligence and their intrinsic motivation. The findings of the study indicate that participants' attitudes toward artificial intelligence show a significant difference in the positive attitude sub-dimension based on gender. It was observed that this difference favored female participants compared to male participants. This situation can be explained by the fact that women tend to benefit more from technology and the conveniences it brings, such as artificial intelligence, leading to a different perspective on artificial intelligence compared to men. When the literature is reviewed, studies conducted in different fields but showing similarities to the topic were encountered. In the study conducted by Acem et al. (2024), which aimed to examine participants' attitudes toward artificial intelligence, it was found that female participants had significantly more positive attitudes toward artificial intelligence compared to male participants. On the other hand, no significant difference was found in intrinsic motivation scores based on gender. Similar results have also been found in other studies. In the research conducted by Fermanoğlu (2015), the findings obtained from the participants indicated that there was no significant difference in intrinsic motivation based on gender.

The study findings also indicate that participants' attitudes toward artificial intelligence show a significant difference in the negative attitude sub-dimension based on marital status, favoring married participants. It was found that the negative attitude scores of married participants were significantly higher than those of single participants, meaning that single participants had lower negative attitude scores compared to married participants. This could be due to the difficulties and responsibilities that married individuals face in their lives, which may lead them to have a more limited evaluation of technology compared to single individuals. When the literature is reviewed, similar findings have been reported in a study by Umar et al. (2016), which examined attitudes toward artificial intelligence, although some differences were also noted. Umar et al. stated that single individuals had significantly more positive attitudes in the positive attitude sub-dimension. On the other hand, no significant difference was found in intrinsic motivation scores based on marital status. A study by Ertan (2008) also found no significant difference between marital status and intrinsic motivation, aligning with the results of the present study.

The study findings further indicate that participants' attitudes toward artificial intelligence show a significant difference in both sub-dimensions based on age. The tests conducted to determine the source of this difference revealed that, in the positive attitude sub-dimension, participants aged 36-40 had higher mean scores than those aged 46-50. In the negative attitude sub-dimension, the results were more complex: participants aged 36-40 and 41-45 had significantly higher scores than those aged 25-30, while participants aged 46-50 had significantly higher scores than those aged 25-30, 31-35, and 36-40. Based on these findings, it can be stated that attitudes toward artificial intelligence vary with age and that individuals in

certain age groups may have a more reserved perspective on artificial intelligence. The difference observed in the 36-40 age group in the positive attitude sub-dimension can be attributed to their closer familiarity with technology. Conversely, in the negative attitude sub-dimension, older participants' greater distance from technology may negatively affect their attitudes toward artificial intelligence. Some studies in the literature report that older individuals have a more positive outlook on artificial intelligence (Park et al., 2022), whereas other studies align with the present findings, suggesting that younger individuals have more positive attitudes toward artificial intelligence (Gillespie et al., 2021). Additionally, a significant difference was found in intrinsic motivation mean scores based on age, favoring participants in all age groups except the 25-30 age group. In other words, participants aged 31-35, 36-40, 41-45, and 46-50 had higher intrinsic motivation scores. This suggests that as age increases, sports managers experience higher intrinsic motivation in their work. Supporting findings can also be found in the literature. In a study by Ertan (2008), participants' intrinsic motivation levels were examined, and a significant difference was found between age and intrinsic motivation, favoring older individuals over younger ones.

The study findings also indicate that participants' attitudes toward artificial intelligence show a significant difference in both sub-dimensions based on educational status. The tests conducted to determine the source of this difference revealed that, in the positive attitude sub-dimension, participants with postgraduate education had significantly higher mean scores than those with high school, associate, and undergraduate education. In the negative attitude sub-dimension, participants with associate and undergraduate education had significantly higher mean scores than those with postgraduate education. Based on these findings, it can be argued that individuals' educational levels influence their attitudes toward artificial intelligence and that higher education levels lead to a more positive outlook. On the other hand, individuals with lower education levels tend to be less receptive to artificial intelligence. The literature review revealed a study by Kandemir and Azizoğlu (2024) examining nurses' attitudes toward artificial intelligence, which did not align with the present findings. Their study found that attitudes toward artificial intelligence did not vary based on educational status. In other words, no significant difference was found between marital status and attitudes toward artificial intelligence. Furthermore, no significant difference was found in intrinsic motivation levels based on educational status. In line with these findings, a study by Yusein (2014) also found no significant relationship between educational status and intrinsic motivation.

The study findings indicate that participants' attitudes toward artificial intelligence show a significant difference in the positive attitude sub-dimension based on income status. The tests conducted to determine the source of this difference revealed that participants with an income of 40,001 TL to 60,000 TL and those with an income of 60,001 TL and above had significantly higher scores in the positive attitude sub-dimension compared to those with an income of 20,000 TL to 40,000 TL. This finding can be explained by the idea that individuals with higher income levels experience fewer financial difficulties, allowing them to embrace technological advancements such as artificial intelligence more freely. On the other hand, no significant difference was found in intrinsic motivation mean scores based on income status.

The main research question aimed to examine the relationship between sports managers' attitudes toward artificial intelligence and their intrinsic motivation. The analysis revealed a low-level significant negative relationship between the positive attitude sub-dimension of artificial intelligence attitudes and intrinsic motivation. In other words, individuals with higher intrinsic motivation levels may approach artificial intelligence more cautiously and in a more controlled manner. This finding suggests that while artificial intelligence facilitates

many aspects of life, it may not significantly impact individuals with high intrinsic motivation. It can be argued that people with high intrinsic motivation have a strong drive to achieve their goals, which serves as an internal force helping them overcome challenges, making them less reliant on artificial intelligence for convenience. Among the sports managers who participated in the study, this negative but low-level significant relationship suggests that individuals with higher intrinsic motivation are less likely to exhibit a positive attitude toward artificial intelligence. Future research could modify demographic variables, conduct similar studies with sports managers from other regions in the country, and perform comparative analyses to provide further contributions to the literature.

5. Limitations

This study is limited to sports managers working in fitness centers located in the Marmara Region and the attributes measured by the assessment tools used in the research.

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