DOI: http://dx.doi.org/10.22122/ijbmc.v11i5.814 Published by Vesnu Publications

International Journal of Body, Mind and Culture

Cognitive Factors Affecting the Development of Artificial Intelligence and Startups in Sports in Iran

Mohsen Pasban[1], Shahram Ahanjan[2], Hadi Miri[3], Ghazal Ahanjan[4]

1 Postdoctoral Researcher, Department of Physical Education and Sports Sciences, Amirkabir University of Technology, Tehran, Iran
2 Associate Professor, Department of Physical Education and Sports Sciences, Amirkabir University of Technology, Tehran, Iran
3 Assistant Professor, Department of Physical Education and Sports Sciences, Amirkabir University of Technology, Tehran, Iran
4 Computer Engineering Student, Sharif University of Technology, Tehran, Iran

Corresponding Author: Shahram Ahanjan; ***Associate Professor, Department of Physical Education and Sports Sciences, Amirkabir University of Technology, Tehran, Iran***
Email: ahanjan@aut.ac.ir

Quantitative Study

Abstract

Background: Artificial intelligence (AI) is transforming industries worldwide, including the sports sector, where it offers opportunities for performance optimization, data analytics, and business innovation. However, the adoption of AI in sports startups depends heavily on the cognitive factors influencing key decision-makers. This study aims to examine the cognitive factors influencing the adoption and development of AI in sports startups in Iran.

Methods: A quantitative cross-sectional study was conducted, involving 133 participants from various sectors within the Iranian sports industry, including startup founders, university professors, and sports managers. Participants were required to have at least a bachelor's degree to ensure a knowledgeable sample. Data were collected using a researcher-developed questionnaire based on a 5-point Likert scale, measuring six cognitive factors: Perception of AI's Usefulness, Cognitive Readiness for Technological Innovation, Risk Perception and Tolerance, Attitude Toward AI-Driven Change, Knowledge and Awareness of AI Technologies, and Knowledge and Awareness of AI Technologies (duplicate). Structural equation modeling (SEM) was conducted using LISREL software to analyze the data, with factor loadings, path coefficients, and reliability indicators (AVE, CR, and Cronbach's Alpha) calculated to assess the model's validity and reliability.

Results: The most influential factor was Cognitive Readiness for Technological Innovation, followed by Attitude Toward AI-Driven Change and Perception of AI's Usefulness. Risk Perception and Tolerance also played a moderate role in influencing AI adoption, while Knowledge and Awareness of AI Technologies demonstrated strong relationships with AI integration. Path coefficients and t-values indicated significant effects of cognitive factors on AI adoption in sports startups.

Conclusion: Cognitive readiness, positive attitudes toward AI, and knowledge of AI technologies are critical for the successful adoption of AI in sports startups. Addressing

risk perceptions and enhancing awareness through education and training can further promote AI integration in this sector.

Keywords: Artificial intelligence; Cognitive factors; Sport startups; Sports industry; Iran

Citation: Pasban M, Ahanjan S, Miri H, Ahanjan G. **Cognitive Factors Affecting the Development of Artificial Intelligence and Startups in Sports in Iran.** Int J Body Mind Culture 2024; 11(5): 637-48.

Received: 06 Aug. 2024
Accepted: 01 Sep. 2024

Introduction

In recent years, artificial intelligence (AI) has rapidly evolved, fundamentally altering various sectors, including the sports industry (Ehteshamnejad, 2023; Taheri, 2023a, 2023b). AI's cognitive capabilities, ranging from machine learning to deep learning models, have enabled innovative developments in areas such as sports analytics, player performance optimization, and the management of sports startups. AI, particularly when combined with advanced data analysis and cognitive computing, presents an unprecedented opportunity to enhance decision-making in sports startups (Amini, 2022; Rahimi et al., 2024; Rahmani et al., 2024). As argued by Fjelland (2020), while the development of general artificial intelligence remains speculative, specific applications such as AI in sports technology have gained traction due to their immediate practical value (Fjelland, 2020).

One key challenge in the development of AI-enhanced startups lies in the cognitive aspects of human-machine collaboration. The cognitive architecture of AI systems, emphasizes the importance of hybrid intelligence models that integrate human insight with machine-driven processes (Liu, 2021; Liu, 2024). This integration becomes particularly significant in sectors like sports, where human intuition, experience, and decision-making are critical to the success of both AI technologies and entrepreneurial ventures. The success of AI applications in complex environments such as sports startups depends not just on the sophistication of the technology but also on the cognitive models that guide their development (Bryndin, 2019a, 2019b; Bryndin & Bryndina, 2020; Liu, 2024).

AI's cognitive capabilities are largely shaped by its ability to process large volumes of data, identify patterns, and generate predictions. In sports, this translates to performance analytics, injury prevention, and tactical optimization, areas that are vital for startups seeking to disrupt traditional approaches to sports management. For example, research by Bachri et al. (2019) and Sereati et al. (2020) highlights how cognitive AI tools can be used for tasks such as gas analysis interpretation and processor emulation, providing a glimpse into how similar technologies could be adapted to sports-related applications. The increasing reliance on AI in these areas underscores the need to understand the cognitive dynamics that influence AI's effectiveness in real-world entrepreneurial settings (Bachri et al., 2019; Sereati et al., 2020).

Moreover, the ethical considerations surrounding AI's cognitive processes are becoming increasingly relevant as AI technologies are more widely adopted in sports. Researchers argue that AI's decision-making processes must be transparent and aligned with ethical standards, particularly in environments where the stakes are high, such as sports competitions or financial investments in startups (Bryndin, 2019a, 2019b; Lipchanskaya, 2022). AI systems used in sports must be designed to handle ethical dilemmas, such as the fairness of automated decisions and the responsibility for AI-driven outcomes in competitive settings (Bryndin & Bryndina, 2020). This study addresses these concerns by examining the cognitive frameworks that guide AI's decision-making processes in sports startups, ensuring that they align with ethical principles.

The role of leadership and organizational structure also plays a crucial part in the cognitive development of AI within sports startups. As Amini (2022) suggests, transformational leadership has a significant impact on organizational resilience, which in turn affects job commitment and the adoption of innovative technologies like AI. In the context of sports startups, leaders must foster a cognitive culture that embraces AI's potential while also managing the challenges associated with its integration. This is

particularly important in Iran, where the sports industry is rapidly evolving, and AI startups are emerging as key players in this transformation (Amini, 2022).

Cognitive science has also played an influential role in advancing AI technologies, as demonstrated by studies such as those by Martnez-Plumed et al. (2017) and Zhao et al. (2022). These studies show how cognitive psychology-based AI can be applied to various fields, including sports, to enhance decision-making and strategic planning. By leveraging cognitive science, AI in sports startups can better mimic human thought processes, leading to more accurate predictions, strategic insights, and ultimately, improved outcomes for both athletes and businesses (Martnez-Plumed et al., 2017; Zhao et al., 2022).

Furthermore, the interdisciplinary nature of cognitive AI makes it uniquely suited for application in sports startups, where knowledge from various fields is required for success. Leydesdorff & Goldstone (2013) and Krinkin et al. (2022) emphasize the importance of interdisciplinary approaches to AI development, where insights from fields such as cognitive science, engineering, and entrepreneurship are integrated to create more robust AI systems. In sports startups, this interdisciplinary approach allows for the development of AI technologies that are not only technically advanced but also grounded in the cognitive realities of human decision-making and performance optimization (Krinkin et al., 2022; Leydesdorff & Goldstone, 2013).

Sports startups in Iran, like their counterparts worldwide, are beginning to explore AI's cognitive capabilities to enhance their operations. However, the cognitive challenges of AI adoption in sports startups are compounded by the dynamic and high-pressure nature of the sports industry (Rostamzadeh Ganji & Nemat, 2023; Shokrollahi, 2023; Taheri, 2023a). As Fjelland (2020) points out, the cognitive demands placed on AI systems in high-stakes environments are substantial, requiring careful consideration of how these systems process information, make decisions, and interact with human operators. The success of AI in sports startups will depend on the ability of these systems to navigate these cognitive challenges effectively (Fjelland, 2020). In summary, the cognitive factors influencing AI development in sports startups are significant, encompassing ethical considerations, leadership dynamics, interdisciplinary collaboration, and the unique challenges of the sports industry. This study aims to explore the cognitive factors influencing the development of AI and its integration into startups within the sports sector in Iran.

Methods

Study Design and Participants: The study involved a cross-sectional survey design, with data collected from 133 participants. The participants were selected from a pool of professionals in the sports sector, including university professors, startup founders, and sports managers. The inclusion criteria required participants to have a minimum educational qualification of a bachelor's degree, ensuring that the sample had a sufficient level of knowledge to provide informed responses. The participants were drawn from various positions within the sports sector, such as federation presidents, vice presidents, and general secretaries, to capture a diverse range of perspectives. The age distribution of the participants ranged from 20 to over 50 years old, and both genders were well represented.

Data Collection Tool: The primary data collection tool was a researcher-developed questionnaire, designed to measure the cognitive factors influencing AI adoption in sports startups. The questionnaire utilized a 5-point Likert scale ranging from "strongly disagree" to "strongly agree." The questionnaire was divided into sections

corresponding to the six key cognitive factors: Perception of AI's Usefulness, Cognitive Readiness for Technological Innovation, Risk Perception and Tolerance, Attitude Toward AI-Driven Change, Knowledge and Awareness of AI Technologies, and Knowledge and Awareness of AI Technologies (duplicate). Each cognitive factor was assessed through multiple items, with the factor loadings of these items later analyzed to determine their contribution to the overall model. The validity of the questionnaire was ensured through expert reviews by professionals in the fields of sports management and artificial intelligence. These experts assessed the content for relevance, clarity, and completeness, ensuring that the questions accurately reflected the cognitive dimensions under investigation. The reliability of the instrument was confirmed through a pilot test involving a small subset of participants, with a Cronbach's Alpha coefficient calculated to ensure internal consistency for each cognitive factor.

Data Analysis: The collected data were analyzed using the LISREL software, which is widely used for structural equation modeling (SEM). SEM was employed to examine the relationships between the cognitive factors and the development of AI-driven startups. Factor analysis was used to identify the underlying structure of the cognitive factors, with factor loadings calculated for each item in the questionnaire. These loadings indicated the degree to which each item was related to its corresponding factor, with higher loadings suggesting stronger associations. To assess the reliability of the constructs, the study calculated Average Variance Extracted (AVE), Composite Reliability (CR), and Cronbach's Alpha for each cognitive factor. AVE values greater than 0.50 indicated that the majority of variance in the observed variables was explained by their underlying factors. Composite reliability scores exceeding 0.70 suggested good internal consistency, and Cronbach's Alpha values confirmed the reliability of the factors. In addition, convergent and divergent validity were examined to assess the validity of the constructs. Convergent validity was confirmed if the factor loadings were above the recommended threshold, while divergent validity was assessed by comparing the square roots of the AVE values with the correlations between factors. The results indicated adequate divergent validity, confirming that the cognitive factors were distinct from one another. Finally, path analysis was conducted to determine the strength and significance of the relationships between the cognitive factors and the development of AI-driven startups. Path coefficients, t-values, and p-values were reported, with significant paths ($P < 0.01$) indicating a strong influence of cognitive factors on the adoption of AI technologies in the sports industry.

Results

The sample size for this study consisted of 133 participants. Out of the total, 40 participants (30.1%) were male, while 93 participants (69.9%) were female. The age distribution showed that 38 participants (28.6%) were between the ages of 20 and 30, 58 participants (43.6%) were aged between 31 and 40, 21 participants (15.8%) were aged between 41 and 50, and 16 participants (12.0%) were over 50 years old. Regarding education, 17 participants (12.8%) had a bachelor's degree, 65 participants (48.9%) held a master's degree, and 51 participants (38.3%) had a PhD. Concerning job positions, 22 participants (16.5%) were federation presidents, 15 (11.3%) were general secretaries, 11 (8.3%) were vice presidents, 27 (20.3%) were startup founders, 23 (17.3%) were university professors, 20 (15.0%) were PhD students, 10 (7.5%) were directors of the Ministry of Sports, and 5 (3.8%) were sports medicine specialists. Additionally,

35 participants (26.3%) were single, while 98 participants (73.7%) were married.

In table 1, the results show that the average score for Perception of AI's Usefulness is 4.29 (SD = 0.47), indicating that most participants perceive AI as a useful tool. The average for Cognitive Readiness for Technological Innovation is 4.00 (SD = 0.59), showing participants are generally prepared for technological innovation. The Risk Perception and Tolerance scored 3.99 (SD = 0.60), revealing moderate concerns about risks associated with AI. The Attitude Toward AI-Driven Change scored an average of 4.19 (SD = 0.47), reflecting a positive attitude toward AI. Lastly, Knowledge and Awareness of AI Technologies was measured twice, with averages of 3.79 (SD = 0.69) and 4.01 (SD = 0.64), showing an overall good level of awareness and knowledge of AI among the participants.

As shown in table 2, the factor loadings for the six cognitive factors ranged from 0.47 to 0.84, indicating moderate to high correlations between the observed variables and their underlying latent factors. For instance, Perception of AI's Usefulness had factor loadings between 0.47 and 0.75, while Cognitive Readiness for Technological Innovation had loadings ranging from 0.67 to 0.84. The loadings for Knowledge and Awareness of AI Technologies ranged between 0.66 and 0.80.

In table 3, Perception of AI's Usefulness had an AVE of 0.63, CR of 0.83, and a Cronbach´s Alpha of 0.76, suggesting a strong internal consistency and reliability. Cognitive Readiness for Technological Innovation displayed an AVE of 0.55, CR of 0.88, and a Cronbach´s Alpha of 0.83, indicating a high level of reliability. All other factors, including Risk Perception and Tolerance and Knowledge and Awareness of AI Technologies, also showed acceptable values for AVE, CR, and Cronbach´s Alpha, affirming the reliability of the constructs.

Table 4 illustrates the divergent validity of the model. The square roots of the AVE values are shown along the diagonal, and all factors display higher values in their own construct compared to their correlations with other constructs. For instance, Cognitive Readiness for Technological Innovation had a value of 0.74, indicating adequate divergent validity. Similarly, Perception of AI's Usefulness had a divergent validity score of 0.79.

Table 5 reports the path coefficients, t-values, and p-values for the relationships between the cognitive factors and the development of AI-driven startups in the sports industry. All factors had statistically significant effects, with Cognitive Readiness for Technological Innovation exhibiting the highest path coefficient (0.89, t = 73.97, P < 0.01). Attitude Toward AI-Driven Change also had a significant effect, with a path coefficient of 0.91 (t = 99.69, P < 0.01).

Discussion

The present study aimed to examine the cognitive factors influencing the development of artificial intelligence (AI) and startups in the sports industry in Iran.

Table 1. Descriptive statistics

Factor	Mean ± SD
Perception of AI's Usefulness	4.29 ± 0.47
Cognitive Readiness for Technological Innovation	4.00 ± 0.59
Risk Perception and Tolerance	3.99 ± 0.60
Attitude Toward AI-Driven Change	4.19 ± 0.47
Knowledge and Awareness of AI Technologies	3.79 ± 0.69
Knowledge and Awareness of AI Technologies (duplicate)	4.01 ± 0.64

SD: Standard Deviation; AI: Artificial intelligence

Table 2. Factor loadings of items

Factor	Item	Factor loading
Perception of AI's Usefulness	Q1	0.47
	Q2	0.75
	Q3	0.63
	Q4	0.58
	Q5	0.66
	Q6	0.68
	Q7	0.67
Cognitive Readiness for Technological Innovation	Q8	0.70
	Q9	0.67
	Q10	0.84
	Q11	0.81
	Q12	0.67
	Q13	0.71
Risk Perception and Tolerance	Q14	0.72
	Q15	0.74
	Q16	0.80
	Q17	0.76
Attitude Toward AI-Driven Change	Q18	0.47
	Q19	0.51
	Q20	0.73
	Q21	0.72
	Q22	0.785
	Q23	0.71
	Q24	0.80
	Q25	0.75
	Q26	0.62
Knowledge and Awareness of AI Technologies	Q27	0.66
	Q28	0.78
	Q29	0.79
	Q30	0.80
	Q31	0.80
Knowledge and Awareness of AI Technologies (duplicate)	Q32	0.71
	Q33	0.67
	Q34	0.71
	Q35	0.67
	Q36	0.67
	Q37	0.77
	Q38	0.76
	Q39	0.68

AI: Artificial intelligence

Six key cognitive factors-Perception of AI's Usefulness, Cognitive Readiness for Technological Innovation, Risk Perception and Tolerance, Attitude Toward AI-Driven Change, Knowledge and Awareness of AI Technologies, and Knowledge and Awareness of AI Technologies (duplicate)-were analyzed to determine their impact on the development of AI-focused startups. The findings revealed significant insights into the cognitive dimensions that either facilitate or hinder the adoption of AI technologies in the sports sector.

Table 3. AVE, Composite Reliability, and Cronbach´s Alpha

Factor	AVE	CR	Cronbach´s Alpha
Perception of AI's Usefulness	0.63	0.83	0.76
Cognitive Readiness for Technological Innovation	0.55	0.88	0.83
Risk Perception and Tolerance	0.57	0.84	0.75
Attitude Toward AI-Driven Change	0.57	0.88	0.85
Knowledge and Awareness of AI Technologies	0.59	0.89	0.82
Knowledge and Awareness of AI Technologies (duplicate)	0.50	0.89	0.86

AVE: Average variance extracted; CR: Composite reliability

Table 4. Divergent Validity (Part I)

Factor	Cognitive readiness	Risk perception	Knowledge & awareness (AI tech)
Cognitive Readiness for Technological Innovation	0.74		
Risk Perception and Tolerance	0.60	0.76	
Knowledge and Awareness of AI Technologies	0.51	0.63	0.77
Knowledge and Awareness of AI Technologies (duplicate)	0.63	0.58	0.67
Perception of AI's Usefulness	0.49	0.47	0.61
Attitude Toward AI-Driven Change	0.48	0.64	0.58

Table 4. Divergent Validity (Part II)

Factor	Perception of AI's usefulness	Attitude toward AI-driven change
Cognitive Readiness for Technological Innovation		
Risk Perception and Tolerance		
Knowledge and Awareness of AI Technologies		
Knowledge and Awareness of AI Technologies (duplicate)	0.71	
Perception of AI's Usefulness	0.56	0.79
Attitude Toward AI-Driven Change	0.53	0.75

AI: Artificial intelligence

The results indicate that Cognitive Readiness for Technological Innovation was the most influential factor, with a path coefficient of 0.89 and a significant t-value of 73.97 ($p < 0.01$). This suggests that individuals' preparedness for technological change is critical in fostering AI adoption. This finding aligns with Liu (2021), who emphasized that cognitive readiness plays a crucial role in technological adoption in various fields (Liu, 2021). In the context of sports startups, where rapid decision-making and innovation are essential, readiness to embrace technological change is vital for AI integration. This is supported by Bryndin and Bryndina (2020), who argued that successful AI integration requires not only technological infrastructure but also cognitive preparedness among key stakeholders (Bryndin & Bryndina, 2020).

Perception of AI's Usefulness also emerged as a significant factor, with a path coefficient of 0.78 and a t-value of 31.66 ($P < 0.01$). This reflects that individuals who perceive AI as useful are more likely to adopt it. This finding is consistent with previous research, such as that of Fjelland (2020), who highlighted the importance of perception in the adoption of AI, particularly in high-stakes environments like the sports industry (Fjelland, 2020). The sports sector, being performance-driven, benefits from AI technologies that can enhance player performance, optimize strategies, and improve operational efficiency. Thus, when decision-makers view AI as beneficial, they are more inclined to invest in and implement these technologies.

The factor Attitude Toward AI-Driven Change had the highest path coefficient at 0.91, with a t-value of 99.69 ($P < 0.01$), indicating that a positive attitude toward AI significantly influences its adoption.

Table 5. Path Coefficients, t-values, and p-values

Factor	Path Coefficient	t-values	p-values (<0.01)
Perception of AI's Usefulness	0.78	31.66	<0.01
Cognitive Readiness for Technological Innovation	0.89	73.97	<0.01
Risk Perception and Tolerance	0.74	29.26	<0.01
Attitude Toward AI-Driven Change	0.91	99.69	<0.01
Knowledge and Awareness of AI Technologies	0.88	81.62	<0.01
Knowledge and Awareness of AI Technologies (duplicate)	0.89	65.08	<0.01

AI: Artificial intelligence

This result is in line with the findings of Ficzere (2023), who reported that a favorable attitude toward AI-driven change plays a pivotal role in the successful integration of AI technologies in various industries (Ficzere, 2023). In sports startups, where innovation and agility are critical, a positive attitude toward AI can lead to faster and more effective adoption of AI solutions. This also supports the notion presented by Fjelland (2020), who noted that the emotional and cognitive openness to change is essential for leveraging AI technologies in dynamic environments (Fjelland, 2020).

Risk Perception and Tolerance was found to be moderately significant, with a path coefficient of 0.74 and a t-value of 29.26 ($P < 0.01$). Participants who perceived higher risks associated with AI were less likely to adopt it, consistent with the findings of Lipchanskaya (2022) and Bryndin (2019a; b), who suggested that risk tolerance is a critical cognitive barrier in AI adoption (Bryndin, 2019a, 2019b; Lipchanskaya, 2022). In the context of sports startups, where financial and operational risks are high, decision-makers may hesitate to integrate AI technologies if they perceive them as risky or uncertain. This highlights the importance of addressing ethical concerns and risk mitigation strategies to foster a conducive environment for AI adoption.

Knowledge and Awareness of AI Technologies also played a crucial role, with two variables showing significant influence: one with a path coefficient of 0.88 ($t = 81.62$, $P < 0.01$) and the other with a path coefficient of 0.89 ($t = 65.08$, $P < 0.01$). These findings suggest that having a sound understanding of AI technologies strongly correlates with the likelihood of AI adoption. This is consistent with research by Martnez-Plumed et al. (2017), who emphasized the importance of cognitive awareness in the effective implementation of AI (Martnez-Plumed et al., 2017). The more knowledgeable the stakeholders are about the capabilities and limitations of AI, the more likely they are to leverage it for innovation and growth in the sports industry. This also supports the idea proposed by Liu (2024), who highlighted that a deep understanding of AI technologies enhances decision-making processes and boosts confidence in AI integration (Liu, 2024).

The results of this study also underscore the critical role that Cognitive Readiness for Technological Innovation plays in fostering AI adoption. Entrepreneurs and managers in sports startups who possess a readiness for innovation are more likely to embrace AI technologies. This supports the work of Liu (2021), who argued that cognitive readiness not only facilitates the integration of AI technologies but also enhances the ability to respond to technological challenges (Liu, 2021). In the sports industry, where innovation is key to gaining a competitive edge, being mentally prepared for technological disruptions is essential for success.

Like any other study, several limitations must be acknowledged. First, the sample size of 133 participants, while sufficient for the scope of this research, may not fully capture the diversity of perspectives within the sports industry in Iran. Future studies could expand the sample to include a broader range of stakeholders, such as athletes, coaches, and fans, to provide a more comprehensive understanding of the cognitive factors influencing AI adoption. Additionally, the study relied on self-reported data from questionnaires, which may be subject to response biases, such as social desirability bias. Participants may have reported more favorable attitudes toward AI due to societal or professional pressures. Lastly, the study was conducted within a specific cultural and geographical context, which may limit the generalizability of the findings to other regions or industries. The unique dynamics of the Iranian sports sector may not fully reflect those in other countries or sports environments, which

should be considered when interpreting the results.

Future research could explore several avenues to build on the findings of this study. First, a longitudinal approach could be employed to track changes in cognitive factors over time and assess their long-term impact on AI adoption in sports startups. This would provide valuable insights into how cognitive readiness, perceptions, and attitudes evolve as AI technologies become more integrated into the sports industry. Additionally, future studies could investigate the role of cultural factors in shaping cognitive attitudes toward AI. Comparative studies across different countries or regions could help identify whether certain cognitive barriers or facilitators are culturally specific or universal. Another area of interest for future research would be the examination of AI's impact on specific aspects of the sports industry, such as player performance, fan engagement, or marketing strategies. Finally, exploring the ethical implications of AI in sports, particularly regarding data privacy, decision-making, and player welfare, would provide a more nuanced understanding of the challenges and opportunities associated with AI adoption.

To enhance the adoption of AI technologies in sports startups, several practical steps can be taken. First, fostering an environment of technological education and awareness is essential. Stakeholders in the sports industry, particularly decision-makers and entrepreneurs, should be provided with training programs that enhance their knowledge and understanding of AI technologies. This will not only improve their cognitive readiness but also boost their confidence in integrating AI into their operations. Second, addressing risk perceptions is crucial for AI adoption. Sports startups should implement clear risk mitigation strategies and ethical guidelines that address concerns related to data privacy, fairness, and accountability. By demonstrating a commitment to responsible AI practices, startups can reduce the perceived risks associated with AI technologies. Finally, promoting a positive attitude toward AI-driven change is vital for fostering innovation. Leaders within the sports industry should encourage a culture of openness to technological change, where AI is seen as an opportunity rather than a threat. By highlighting the tangible benefits of AI, such as improved performance and efficiency, stakeholders can be motivated to embrace AI-driven innovation in their organizations.

Conclusion

In conclusion, the findings of this study reveal that cognitive factors are paramount in determining the adoption of AI in sports startups. A positive perception of AI, readiness for technological innovation, and knowledge of AI technologies are among the most significant contributors to successful AI integration. However, risk perception remains a barrier that needs to be addressed to ensure broader acceptance of AI technologies. These results echo previous studies (Bryndin, 2019a, 2019b; Ficzere, 2023; Fjelland, 2020; Leydesdorff & Goldstone, 2013; Martnez-Plumed et al., 2017), which identified similar cognitive barriers and facilitators in other industries.

Conflict of Interests

Authors have no conflict of interests.

Acknowledgements

We would like to express our gratitude to all individuals helped us to do the project.

According to the authors, this article has no financial support.

Ethics Considerations: The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants.

References

Amini, A. (2022). The effect of transformational leadership on job commitment according to the mediating role of organizational resilience. *Journal of Adolescent and Youth Psychological Studies (JAYPS)*, *3*(1), 480-489. https://doi.org/10.61838/kman.jayps.3.1.38

Bachri, K. O., Khayam, U., Soedjarno, B. A., Sumari, A. D. W., & Ahmad, A. S. (2019). Cognitive Artificial-Intelligence for Doernenburg Dissolved Gas Analysis Interpretation. *Telkomnika (Telecommunication Computing Electronics and Control)*, *17*(1), 268. https://doi.org/10.12928/telkomnika.v17i1.11612

Bryndin, E. (2019a). Collaboration Robots as Digital Doubles of Person for Communication in Public Life and Space. *Budapest International Research in Exact Sciences (Birex) Journal*, *1*(4), 1-11. https://doi.org/10.33258/birex.v1i4.473

Bryndin, E. (2019b). Practical Development of Creative Life-Saving Artificial Intelligence. *Communications*, *7*(2), 31. https://doi.org/10.11648/j.com.20190702.11

Bryndin, E., & Bryndina, I. G. (2020). Communicative-Associative Transition to Smart Artificial Intelligence by Criteria With Help of Ensembles of Diversified Agents. *Budapest International Research in Exact Sciences (Birex) Journal*, *2*(4), 418-435. https://doi.org/10.33258/birex.v2i4.1256

Ehteshamnejad, E. (2023). The Business of Sports: Insights Into Effective Sports Management and Marketing Strategies. *Health Nexus*, *1*(4), 78-80. https://doi.org/10.61838/kman.hn.1.4.9

Ficzere, P. (2023). The Role of Artificial Intelligence in the Development of Rail Transport. *Cognitive Sustainability*, *2*(4). https://doi.org/10.55343/cogsust.81

Fjelland, R. (2020). Why General Artificial Intelligence Will Not Be Realized. *Humanities and Social Sciences Communications*, *7*(1). https://doi.org/10.1057/s41599-020-0494-4

Krinkin, K., Shichkina, Y., & Ignatyev, A. (2022). Co-Evolutionary Hybrid Intelligence Is a Key Concept for the World Intellectualization. *Kybernetes*, *52*(9), 2907-2923. https://doi.org/10.1108/k-03-2022-0472

Leydesdorff, L., & Goldstone, R. L. (2013). Interdisciplinarity at the Journal and Specialty Level: The Changing Knowledge Bases of the Journal <i>cognitive Science</I>. *Journal of the Association for Information Science and Technology*, *65*(1), 164-177. https://doi.org/10.1002/asi.22953

Lipchanskaya, M. A. (2022). Artificial Intelligence Responsibilities: Ethical and Legal Issues. https://doi.org/10.15405/epsbs.2022.03.1

Liu, J. (2021). Cognitive Computing Integrated Methodology for Smart Decision Making and Problem-Solving. https://doi.org/10.21203/rs.3.rs-927958/v1

Liu, Y. (2024). Hybrid Intelligence: Design for Sustainable Multiverse via Integrative Cognitive Creation Model Through Human–Computer Collaboration. *Applied Sciences*, *14*(11), 4662. https://doi.org/10.3390/app14114662

Martnez-Plumed, F., Ferri, C., Hernndez-Orallo, J., & Ramrez-Quintana, M. J. (2017). A Computational Analysis of General Intelligence Tests for Evaluating Cognitive Development. *Cognitive Systems Research*, *43*, 100-118. https://doi.org/10.1016/j.cogsys.2017.01.006

Rahimi, E., Heidari, A., & Ghasemi, B. (2024). The Impact of Entrepreneurship-Based Branding on Startup Performance. *International Journal of Innovation Management and Organizational Behavior (IJIMOB)*, *4*(1), 100-106. https://doi.org/10.61838/kman.ijimob.4.1.12

Rahmani, N., Naderi Nasab, M., Taheri, M., & Biniaz, S. A. (2024). The Future of Sports Industry: AI and Economic Transformations. *AI and Tech in Behavioral and Social Sciences*, 19-29. https://journals.kmanpub.com/index.php/aitechbesosci/article/view/2876

Rostamzadeh Ganji, E., & Nemat, V. (2023). Presenting a Model for Enhancing

Psychological Well-being and Reducing Stress among Mine Workers in the Workplace. *International Journal of Innovation Management and Organizational Behavior (IJIMOB)*, *3*(2), 89-99. https://doi.org/10.61838/kman.ijimob.3.2.11

Sereati, C. O., Sumari, A. D. W., Adiono, T., & Ahmad, A. S. (2020). Towards Cognitive Artificial Intelligence Device: an Intelligent Processor Based on Human Thinking Emulation. *Telkomnika (Telecommunication Computing Electronics and Control)*, *18*(3), 1475. https://doi.org/10.12928/telkomnika.v18i3.14835

Shokrollahi, N. (2023). Employee Engagement in the Era of Remote Work: Strategies for Innovation and Productivity. *International Journal of Innovation Management and Organizational Behavior (IJIMOB)*, *3*(1), 122-128. https://doi.org/10.61838/kman.ijimob.3.1.15

Taheri, M. (2023a). Enhancing Cognitive Abilities and Delaying Cognitive Decline in the Elderly through Tailored Exercise Programs. *Health Nexus*, *1*(4), 67-77. https://doi.org/10.61838/kman.hn.1.4.8

Taheri, M. (2023b). Shaping the Future Together: The Inaugural Vision for AI and Tech in Behavioral and Social Sciences. *AI and Tech in Behavioral and Social Sciences*, *1*(1), 1-3. https://doi.org/10.61838/kman.aitech.1.1.1

Zhao, J., Wu, M., Zhou, L., Wang, X., & Jia, J. (2022). Cognitive Psychology-Based Artificial Intelligence Review. *Frontiers in Neuroscience*, *16*. https://doi.org/10.3389/fnins.2022.1024316