

Exploring the impact of information technology on motivation and performance in sports: a psychological perspective

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Abstract

The essential purpose of this research study is to determine the impact of information technology related to motivation and performance in sports. This research study depends upon psychological perspective research based on the primary data analysis to determine the research study develop different questions related to information technology and motivation and the sport's performance. These questions fulfill by different participants who know information technology and motivation. Information technology is the main independent variable, motivation is the mediator variable, and the performance of sport is the main dependent variable. To determine the research study used SPSS software and generated informative results related to variables. The descriptive statistic analysis, the one-way ANOVA test analysis, the regression analysis, variance analysis also that present graphical analysis related to dependent and independent variables. the overall research found that information technology positively impacts motivation and performance in sports.

Keywords: Information Technology (IT), Motivation (M), Performance in Sports (PIS), Psychological Perspective (PP)

Introduction

The revolution in technology has resulted in the development of various technology-based fields. The sports field is among the most influenced field due to the technological revolution. Sports training has become easy due to technology use in this field. The transformation of the sports world because of the technological revolution has resulted in the success of sports-related sectors. The use of ICT in sports sectors helps the new athletes to learn about sports tactics by using technology-based sports equipment. information technology is a communication-based technology that is used in sports-related mobile apps, software, and sports monitors. The use of ICT in sports monitoring systems provides information about all the activities taking place in a sports field in digital form. ICT helps establish a learning environment so athletes can learn new sports. In most physical education-based institutes, sports students are provided knowledge about ICT to enhance their sports learning abilities (Abdulrahaman et al., 2020). Student motivation in sports-related activities gets enhanced because of ICT-based teaching methods. Students getting physical education based on the ICT phenomenon are more likely to learn sport-related information with full enthusiasm and motivation. also, to ensure that students of physical education are getting proper benefits from ICT based education system, the ICT system is optimized and updated after some time by physical education-providing institutes (Kim, 2020).

To understand the motivation concept in athletes, self-determination theory is used in physical education. This theory provides knowledge based on three major concepts to physical education students. The first concept is behavior. developing sport-oriented behavioral abilities in students through using ICT based education system helps in improving the behavioral activities of sports students. The second concept is developing initiation ability in sports students. the third concept of this theory is to develop regulatory behavior in new athletes (Kumar, Muniandy, & Wan Yahaya, 2019). Regulatory behavior allows the new athlete to understand the game tactics and then regulate their game-playing behavior according to the situation. all these three concepts together when taught to students using technology-based technique shows a great impact on athlete performance in the sports field. one major benefit of this therapy is that it supports the self-determination approach development in athletes. Self-determination motivates new athletes to get more knowledge about the game before playing so that when they play, they get to excel in it. The development of the intrinsic motivation approach in athletes is possible using the approach of self-determination theory (Moquin, K. Riemenschneider, & L. Wakefield, 2019). The intrinsic motivators develop a more sport-engaging spirit in athletes and make them concentrate on their game. A higher level of devotion of athletes toward their game brings higher success opportunities for athletes. Also, to ensure that learners of specific sports are getting motivational support, a supportive environment is provided to them by physical education providing organizations (Qi, 2019).

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The providence of sports education to sports students with a nonlinear dynamical movement system is possible using the nonlinear pedagogic approach. This approach works on the principle of information technology and encourages the process of individualized learning. This approach is made up of five Designs. The first design is a learning design that provides information to students about various sports (Turner et al., 2022). The second design is constraints manipulation design. The third plan comprises focusing the attention of players or athletes on the instructions given to them. The fourth design is the conservation of information and coupling movement design. This design teaches students how to conserve their energy while getting proper movement-based sports training. The fifth design of the non-pedagogic approach is the functional variability design. All these designs work in their way to develop motivation factors in beginner athletes. The basic principle behind using information technology in a non-pedagogic approach is to make the learning environment capable of meeting the demands of sports ever-changing sports field

Xie et al. (2020) also, the psychological needs of sports learners are improved using a non-pedagogic approach. Individuals have intrinsically more learning ability and are more motivated towards their goals in sports. The inclination of highly motivated individuals toward their game is more than individuals having low motivation toward their respective game. The intrinsic motivation in athletes develops a learning approach, and their performance in sports improves. During the non-pedagogic approach, individual sports learners are allowed to improve their playing skills. The learning environment based on the ICT principle allows each sports learning student to learn while having their unique playing characteristics. Functional movement ability is provided to individuals learning sports tactics in a non-pedagogic learning environment (Xing et al., 2020). In various physical education-based sports organizations, the use of a non-pedagogic approach holds great importance. This NLP approach encourages physical education learning students to learn using their unique thinking and ideas.

The challenging situation faced by athletes in physical education is overcome by using ICT-based methods and techniques. Using the ICT approach facilitates teachers to teach students about innovative sports skills using innovative Designs. The innovative designs motivate the students to learn with full enthusiasm. The variability factor is induced in students using the ICT approach. Moreover, the use of ICT in any training session allows learners to easily grasp the knowledge given to them about specific playing skills. Live feedback about an athlete's

game-playing skill is provided through the use of ICT in sports practice (Xu et al., 2020). Feedback lets an athlete learn more about his shortcoming in sports and his playing skills. All types of physical activities performed by new athletes allow them to level up their physical skills and give them a new profile. The abilities beginner athlete learn through various physical activities polish their game-playing skills and provides tremendous benefit to athletes during their professional sports career (Yue, Men, & Ferguson, 2021). The sport psychology organization is working to make ICT based sports training approach more common in physical education-based institutes and to provide more knowledge to the sports students about technology-based sports at an early level.

Research objectives

The research objectives of this study are to understand the concept of ICT in promoting motivation in sports students. the impact of ICT in improving athletes' performance and motivation in games is studied in this research article.

This research study divided into five specific research chapters: first portion describe that introduction included objective of research also that explain the questions. The second part describe literature review and explain hypothesis development. The third portion represent the research methodology included tools, techniques, methods. The fourth part describe result and its descriptions the last portion represent that conclusion and present some recommendations about information technology and motivation also performance in sport.

Literature review

Researchers predict that overusing smartphones can cause mental fatigue in sports players. Sports players are often suggested by sports psychologists to have minimal use of their phones before the sports playing competition. In jumping sports, athletes that overuse smartphones face great problems while playing. The performance of jumping sports players having mental fatigue decrease. The force and velocity with which an athlete play before mental fatigue become less after he develops mental fatigue problems (Alix-Fages et al., 2023). Studies claim that new anti-doping methods are now being used in the sports fields for making the field better for sports games. The performance of elite athletes depends upon the anti-doping used in the sports field (Bezuglov et al., 2023). Studies claim that an athlete's performance gets disturbed when he plays under pressure. This pressure built up in athletes can be overcome using mindfulness-based interventions. These intervention builds self-esteem in athlete and motivates them to play with full confidence. The behavioral changes

observed in players facing game pressure problem is overcome using mindfulness-based protocols. These protocols enhance the game-playing ability of athletes and make their performance better with each game they play (Chang et al., 2023). Studies claim that for teaching psychomotor skills to players through collaborative teaching methods it is important to know athletes' body position as well as movement. Using a neural network-based approach based on the IT principle can help in predicting the body movements of athletes. Computer visionary techniques based on the IT approach are used to observe every body movement of a karate player to teach him psychomotor skills. The collaborative teaching approach then improves the performance of athletes as a player in sports (Echeverría & Santos, 2023). Studies show that technological advancement has resulted in the development of AI teams. These teams work with AI human-based teams to improve the working efficacy of the sports field. AI teammates, help in improving the performance of the athlete, and influence the player to concentrate on their goal (Flathmann et al., 2023). Studies show that technological involvement in every area of life has changed the skill learning process for students. Sports students tend to learn more from social media than from other physical training sessions. Virtual learning platforms teach students about game-playing tactics from every possible angle. Sports students learn more from virtual or social media sports apps as compared to physical training sessions (Kalam, Goi, & Tiong, 2023). studies explain that technology use is growing in the world because of its tremendous applications in every field. To enhance the motivation of sports students, they are given training through digitalized games .digitalizing the gaming tools boost the performing skills of athletes .by engaging students in digitalized gaming tools, they can learn more about their respective sports and can perform better (Mohd et al., 2023). Studies show that developing self-efficacy in students of sports sciences is essential for their grooming as a player. The self-efficacy ability in athletes helps them to get entrepreneurship in sports-related fields.in physical education providing institutes, students are taught about the importance of developing self-confidence. Self-confidence helps the athlete overcome his fear while playing any sports-related competitions (Naz, Hafeez, & Lodhi, 2023). Studies claim that to make athletes learn more about sports, a learning aptitude is developed in them through the help of coaches. sports psychologists and coaches observe athletes' game-playing skills and then provide training to them based on their skill-adapting abilities. To develop game motivation in young athletes, they are provided with training based on their abilities to

improve their game-playing potential (Papastaikoudis, Collins, & Collins, 2023). Studies predict that athletes face stress and anxiety problems due to game pressure. This stress is overcome in athletes using the new technology-based technostress suppressors. these technostress suppressors are made on ICT principles and reduce stress in athletes and motivate them to play stress-free (Sharma & Gupta, 2023). Scholars suggested that using virtual reality techniques in pedagogic models for treating sports skills athletes holds great importance. the virtual environment helps the athlete to learn more about their body movement and to correct bad posture or movements while playing sports. experimental learning approach becomes possible by using virtual reality as a pedagogic tool (Asad et al., 2022). Studies explain that self-determination therapy explains that the digitalization of the sports teaching process makes athletes learn more about sports-related skills (Chiu, Sun, & Ismailov, 2022). Studies show that students' self-regulatory learning strategies help them to learn more about sports-related fields. in computer-supported collaborative sports learning, the use of an interaction analysis system is common. these AI-based computer collaborative learning programs help develop sport-related motivation in sports students (Michailidis, Kapravelos, & Tsiatsos, 2022). Studies recommend that the sport sampling process helps in the athlete game developmental process. specific sports are played by a specific group of athletes having an appropriate body fitness and body weight. athletes play sports according to their will and strength to avoid any injury situation while playing games (Murata et al., 2022). Studies reveal that to make sports students understand deeply about sports tactics, they are provided with augmented reality-based training. The superimposition of 3D dynamics in the real world is possible using augmented reality technology. The environment provided by augmented reality technology allows sports students to learn more about sports-related areas, and also this technology develops motivation in sports athletes to play well (Wang et al., 2022). Studies explained that two models play a critical role in improving sports-related applications. These models are the technology acceptance model and the information system success model. Both these models use information technology and provide a tremendous application to sports learning students. sports-related apps use TAM to provide sports-related information to sports players. these sports apps use TAM models, providing learning opportunities to students that are easy to comprehend and enjoyable for the players (Won, Chiu, & Byun, 2023). Studies suggest that optical intervention and imagery intervention are combined to teach the athlete about his body movement.

the imagery interventions first observe athletes' posture and then provide complete information regarding their every move in the sports field. these interventions provide personalized imagery-instructions-based teaching to athletes to develop sport-oriented motivation in athletic students (Wright, Frank, & Bruton, 2022). Studies claim that social media platforms use nano influencers as a source of communication moderators to develop sports-playing motivation in athletes. In this whole process, information technology is involved in making the influencing effect of nano influencers more impactful on athletes. moreover, various technology-based broadcasting channels help in developing enthusiastic approaches in players that motivate them to play sports. These broadcasting channels are one of the influencing factors (Zou et al., 2023). Also, studies show that in post covid era, information technology has played a revolutionizing role in diverging athletes' attention towards playing sports.

Research methodology

This research study determines the impact of information technology related to motivation and performance in sports. This research study depends upon primary research data related to the variables information technology is the main independent variable, motivation is the mediator variable the performance of sport is the dependent variable. To determine the research study used SPSS software and generated informative results related to them.

Tools and Techniques, Methods

The research depends upon primary data to determine the result, including descriptive statistics, one-way ANOVA test analysis, also that variance analysis, the regression analysis related to them.

Motivation

Motivation is a vital psychological component that has a big impact on how well athletes perform in sports. It alludes to the mental and external elements that motivate someone's ambition, zeal, and commitment to achieving their sporting objectives. Gaining insight into and using motivation to your advantage can increase performance and make sports more enjoyable. An individual's intrinsic motivation stems from their inherent enjoyment, satisfaction, or interest in the sport. On the other hand, extrinsic motivation comes from outside sources like prizes, acknowledgment, or approval from others. In athletics, setting definite, difficult goals is a great motivator. Sportspeople are motivated to work harder and keep trying until they succeed by having goals because they provide them direction, focus, and a sense of purpose. The self-determination hypothesis contends that people are more

driven when they experience a sense of relatedness, competence, and autonomy. Athletes who feel confident in their abilities and have some control over their training are more likely to be highly motivated. Giving an athlete praise, awards, and recognition for their efforts will help them stay motivated. Positive reinforcement encourages athletes to keep up their excellent performance by reinforcing desired behaviors. Being "in the zone" or experiencing "flow" can be extremely motivating for athletes. Athletes who are completely immersed in their sport and giving their best effort are said to be in the "flow" state (Yadav et al., 2022). Another researcher investigates that Coaches are crucial in inspiring athletes. An athlete's motivation can be significantly impacted by a coach's leadership, communication, and capacity to foster a supportive team atmosphere. An athlete's confidence and motivation can be increased by visualizing winning performances and results. Failures and setbacks are given in athletics. Athletes who can handle these difficulties well and keep a positive outlook are more likely to stay motivated and recover more quickly. Having a solid network of friends, teammates, family, and coaches can provide athletes with the inspiration and drive they need to overcome challenges and pursue achievement. A genuine passion for the sport can be a strong and long-lasting source of inspiration. Athletes are more likely to remain devoted and put up the work necessary for peak performance if they enjoy what they do.

Information Technology

Information technology (IT) is the practice of storing, processing, transmitting and managing data and information using computers, software, networks, and other digital technologies. In today's world, it is essential to business, education, healthcare, entertainment, communication, and many other areas. The following are some essential elements and areas of emphasis in information technology IT refers to the actual hardware, which includes computers, servers, mobile devices, and networking gear. The physical component of IT that processes and stores data is called hardware. Software, which runs on hardware and enables users to accomplish activities, process data, and interact with digital systems, includes apps, operating systems, and other programs. Networking technologies make it easier for various systems and devices to communicate and exchange data. This encompasses the internet, cloud-based infrastructure, local area networks (LANs), and wide area networks (WANs). It requires the effective and secure management of enormous amounts of data. In order to extract useful insights from the data, this comprises database management systems, data storage options, and data analytics. A crucial component of IT, cybersecurity guards against unauthorized access, attacks, and data loss

for networks, computer systems, and data (Adebisi et al., 2023). Cloud computing enables the internet-based delivery of computer services such as analytics, storage, servers, databases, networking, and software. Scalability, affordability, and on-demand resource access are all features it offers. Artificial intelligence (AI) and machine learning (ML) are subsets of information technology that focus on creating systems that can learn from experience and get better without explicit programming. They have uses in many different industries, such as data analysis, automation, robotics, and natural language processing. The IoT is the network of physical items and gadgets that are equipped with sensors and software, enabling them to communicate and collect data. Smart homes, wearable technology, industrial automation, and other areas all benefit from IoT. IT experts create mobile apps for tablets and smartphones that meet a range of industry and user needs. The future of the IT sector is being shaped by new technologies like blockchain, quantum computing, and augmented reality.

Sports performance is a dynamic and complex component of sports, and obtaining excellence calls for a comprehensive strategy that takes into account psychological, technical, tactical, and physical factors. In order to excel in their particular sports, successful individuals and teams always work to hone their abilities and hone their tactics.

Result and Description

Table-1

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
information technology 1	50	1.00	3.00	1.4200	.57463
information technology 2	50	1.00	2.00	1.2400	.43142
motivation 1	50	1.00	3.00	1.4000	.57143
motivation 2	50	1.00	12.00	1.6000	1.59079
performance in sport 1	50	1.00	3.00	1.4000	.57143
performance in sport 2	50	1.00	2.00	1.3200	.47121
Valid N (listwise)	50				

The result describes that descriptive statistic analysis results present minimum values, maximum values also, mean values, and standard deviation rates. Information Technology 1 is the main independent variable. Its mean value is 1.42000, and its standard deviation rate is 0.57, showing that 57% deviation from the mean value.

Information Technology 2 is also an independent variable. Its mean value is 1.2400, and its standard deviation rate is 0.43, showing that 43% deviation from the mean. Motivation 1 is the mediator variable. Its mean value is 1.4000 its standard deviation rate is 57% deviation. The performance in sports 1 and 2 shows that mean values are 1.4000, and 1.32000 shows that positive average value. The standard deviation rates are 0.57 and 0.47, showing 57% and 47% deviation rates between information technology and performance in sports. The overall minimum value is 1.000, and the maximum value is 12.000. The number of observation rates is 50 respectively.

Table-2

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
information technology 1	Between Groups	.007	1	.007	.021	.884
	Within Groups	16.173	48	.337		
	Total	16.180	49			
information technology 2	Between Groups	.002	1	.002	.012	.912
	Within Groups	9.118	48	.190		
	Total	9.120	49			
motivation 1	Between Groups	.033	1	.033	.099	.754
	Within Groups	15.967	48	.333		
	Total	16.000	49			
motivation 2	Between Groups	2.882	1	2.882	1.142	.291
	Within Groups	121.118	48	2.523		
	Total	124.000	49			
performance in sport 1	Between Groups	1.063	1	1.063	3.414	.071
	Within Groups	14.938	48	.311		
	Total	16.000	49			

The above result represents that the one-way ANOVA test result describes the sum of square values, the mean squares, also explains the F statistic also that significant value is present between the group and within the group also that total value. Information Technology 1 is independent. Its sum of square value is 0.007, 16.173, and also that 16.180. All values show the positive sum of the square. The mean square value is 0.337, showing a positive average square value the f statistic value is 0.021, showing a positive relation between them. Its significant rate is 0.994, showing an 88% significant value. Motivation 1 and 2 is the mediator's role. The result describes that the sum of square values is 16.000, 2.882, 121.118, and also that 124.000, showing that positive sum of square rates. The F statistic rate is 1.142 shows a positive rate. The significant rate is 0.291, showing a 29% significant level. The

performance in sports represents that between the group, within the group, and also the total group. Its rates are 1.063, 14.938, also 16.000. The f statistic rate is 3.414, and the significant value is 0.071, shows that the 7% significant level between the dependent and independent variables.

The level of accomplishment and talent displayed by players or teams in their chosen sport is referred to as sports performance. It covers a broad spectrum of physical, technical, tactical, and psychological elements that combine to affect an athlete's or team's performance in competitive sports. There are some essential elements of athletic performance the first element is physical fitness of sportsman because the basis for athletic performance is physical fitness. It consists of elements like power, quickness, stamina, agility, flexibility, and coordination. To prepare their bodies for the demands of their particular activity, athletes must train and condition them. second factor is technical skill is most important for performance in sport. In a given sport, there are particular motions and techniques that must be used. These abilities can be any acts that are essential to excelling in the sport, like shooting, passing, dribbling, serving, striking, or any other. An athlete's capacity to make tactical choices during a match or competition is referred to as tactical awareness. It entails comprehending the dynamics of the game, foreseeing opponents' moves, and making deft decisions to get an edge. The capacity to remain composed, self-assured, and concentrated under stress is known as mental toughness. Even in high-stress circumstances, it enables athletes to overcome obstacles, maintain focus, and perform at their best. Another main elements of team performance are as under:

1. Preparation and Training: Training that is regular and intentional is crucial for enhancing athletic performance. Athletes must adhere to prescribed training regimens, focus on their areas of weakness, and develop their ability physically and intellectually over time.
2. Rest and recuperation: For the best sporting results, adequate rest and recuperation are essential. Athletes who get enough sleep are less likely to burn out, suffer injuries, and perform at their best.
3. Nutrition: Eating well is essential for boosting athletic performance. To perform at their peak and speed up recovery, athletes must provide their bodies with the proper nutrients.
4. Competition Strategy: Competitors might get an advantage by creating strong competition strategies. This entails researching the opposition, discovering their advantages and disadvantages, and adjusting one's strategy accordingly.
5. Sports Science and Technology: The performance of athletes is significantly impacted by developments in sports

science and technology. Wearable technology, video analysis, and other tools help to improve performance and training by offering insightful information.

6. Team Dynamics: Successful team sports require excellent team dynamics, communication, and collaboration. Often, effective teams surpass talented individuals.

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	information technology 1 & motivation 1	50	.410	.003
Pair 2	information technology 2 & motivation 2	50	.232	.105
Pair 3	information technology 1 & performance in sport 1	50	.037	.797
Pair 4	information technology 1 & performance in sport 2	50	.021	.884

The above result describes that paired sample correlation results present correlation values and significant values of each pair. The first pair is information technology and motivation. Its correlation value is 0.410 the significant rate is 0.003, showing that positive and 100% significant value. Pair 2 is information technology two motivation2 shows a correlation rate is 0.232 and a significant value is 0.105, showing that positive and 10% significant level between them. The third pair is information technology and performance in sports. Its rate of correlation is 0.037, and a significant rate is 0.797, showing that 79% significance. The fourth pair is information technology one and Performance in Sport 2. Its correlation rate is 0.021, showing that positive rate its significant rate is 0.884, showing that 88% significant value.

ANOVA^a

	Model	Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1.631	5	.326	.999	.430 ^b
	Residual	14.369	44	.327		
	Total	16.000	49			

a. Dependent Variable: performance in sport 1

b. Predictors: (Constant), performance in sport 2, information technology 2, information technology 1, motivation 2, motivation 1

The above result describes the ANOVA analysis result of describing the sum of squares, mean squares, and F statistic, also that significant value. The regression model shows the sum of the square value is 1.631, and the mean square value is 0.326, the F statistic is 0.999 the significant value is 0.430, showing positive and 43% significant values.

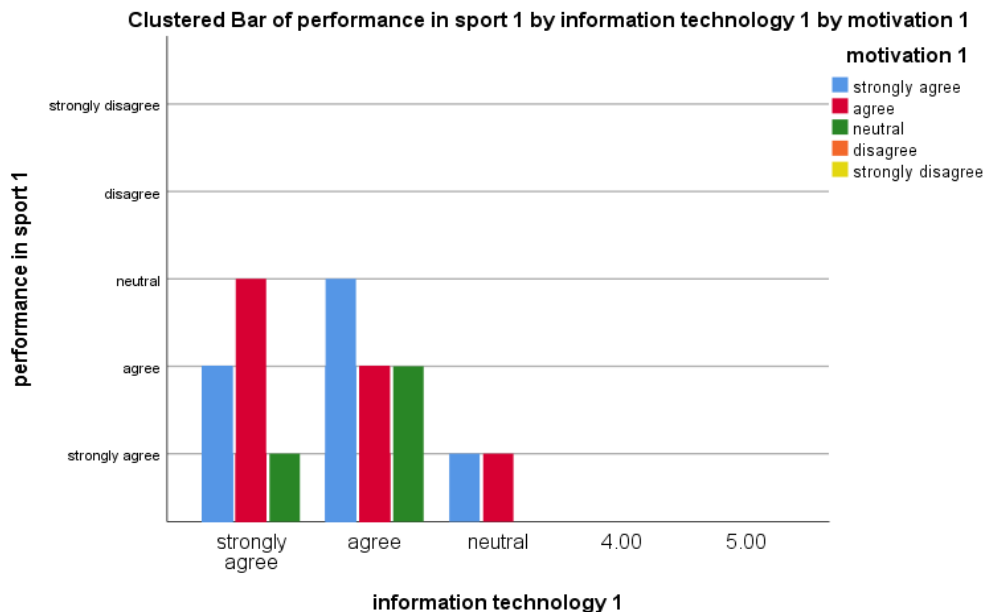
The residual value is 14.369; its mean square value is 0.327 the total value is 16.000, respectively.

Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	2.097	.442		4.746	.000
information technology 1	.068	.158	.069	.432	.668
information technology 2	-.166	.199	-.126	-.835	.408
motivation 1	-.061	.162	-.061	-.374	.710
motivation 2	-.042	.054	-.117	-.772	.444
performance in sport 2	-.330	.176	-.272	-1.878	.067

a. Dependent Variable: performance in sport 1

The above result demonstrates coefficient analysis results describe unstandardized coefficient values, including beta and standard error. The result also describes the standardized coefficient analysis related to beta. The result also describes the t-statistic values and significant values of each independent variable. The performance in sports is the main dependent variable information Technology 1 is independent. Its beta value is 0.068, the standard error value is 0.158, the t statistic rate is 0.432, and the significant value is 0.668, showing positive and 66% significant rates between them. Information Technology 2 is also independent. Its beta value is -0.166, and the t-statistic rate is -0.835; the significant rate is 0.408, showing a 40% significant value. Similarly, motivation 1 shows that the t statistic rate is -0.374. Its significant rate is 0.710, showing a 71% significant value. The performance in Sport 2 shows that the beta value is -1.878 and the significant value is 0.067, showing a 6% significant rate between them.



The above graph describes that clustered bar of performance in sports related to information technology also motivation. The vertical side shows performance in Sport 1. It shows strongly agree, agree, neutral, disagree, and also strongly disagree levels. The horizontal side represents the blue bar line, the red bar line shows agree the neutral level presents the green line. The result describes the relationship between information technology and motivation.

Conclusion

This research study determines the impact of information technology on motivation related to performance in sports.

This research study, based on the primary research for determining the research study used SPSS software. The overall research study concluded that there are positive and significant relations between information technology with motivation. In the end, motivation is a flexible and unique component of athletic performance. Athletes may be inspired by a variety of things, and these things may change over time. To reach peak performance and personal pleasure in sports, coaches, sports psychologists, and athletes themselves can collaborate to understand and hone motivation. IT departments are essential to the management and upkeep of technological infrastructure, user assistance, data security, and the implementation of digital solutions to increase productivity and efficiency in

businesses and organizations. It has become a crucial component of contemporary life, enabling people and organizations to access information, interact, and complete tasks more quickly and effectively. It will remain at the lead of development innovation and influencing how we engage

with the digital world as technology develops. The performance in sports shows a significant link with information technology. The research accepts all alternative hypotheses, including H1 and H2. The research rejects the null hypothesis between them.

Reference

- Abdulrahman, M. D., Faruk, N., Oloyede, A. A., Surajudeen-Bakinde, N. T., Olawoyin, L. A., Mejabi, O. V., Imam-Fulani, Y. O., Fahm, A. O., & Azeez, A. L. (2020). Multimedia tools in the teaching and learning processes: A systematic review. *Heliyon*, 6(11), e05312. <https://doi.org/10.1016/j.heliyon.2020.e05312>
- Adebisi, J. A., Abdulsalam, K. A., Omaidu, O., Babatunde, O. M., & Ndjuluwa, N. P. (2023). Information Technology Driven Teaching and Learning In Post-Covid Era: A survey. *Adeleke University Journal of Science*, 2(1), 12-21. <http://aujs.adelekeuniversity.edu.ng/index.php/aujs/article/download/100/73>
- Alix-Fages, C., Baz-Valle, E., González-Cano, H., Jiménez-Martínez, P., & Balsalobre-Fernández, C. (2023). Mental Fatigue From Smartphone Use or Stroop Task Does Not Affect Bench Press Force-Velocity Profile, One-Repetition Maximum, or Vertical Jump Performance. *Motor Control*, 1(aop), 1-14. <https://doi.org/10.1123/mc.2022-0133>
- Asad, M. M., Naz, A., Churi, P., Guerrero, A. J. M., & Salameh, A. A. (2022). Mix method approach of measuring VR as a pedagogical tool to enhance experimental learning: Motivation from literature survey of previous study. *Education Research International*, 2022, 8262304. <https://doi.org/10.1155/2022/8262304>
- Bezuglov, E., Talibov, O., Lazarev, A., Waškiewicz, Z., & Iljukov, S. (2023). Effects of new anti-doping measures on sports performance in elite female athletes. *Drug Testing and Analysis*. <https://doi.org/10.1002/dta.3484>
- Chang, Y.-K., Gill, D. L., Creswell, J. D., Chen, D.-T., Lin, C.-Y., Chu, C.-H., & Nien, J.-T. (2023). Effect of mindfulness-based intervention on endurance performance under pressure and performance-relevant mental attributes an interdisciplinary perspective: Protocol for a mindfulness-based peak performance (MBPP) trial. *Contemporary clinical trials*, 129, 107175. <https://doi.org/10.1016/j.cct.2023.107175>
- Chiu, T. K., Sun, J. C.-Y., & Ismailov, M. (2022). Investigating the relationship of technology learning support to digital literacy from the perspective of self-determination theory. *Educational Psychology*, 42(10), 1263-1282. <https://doi.org/10.1080/01443410.2022.2074966>
- Echeverría, J., & Santos, O. C. (2023). Towards Analyzing Psychomotor Group Activity for Collaborative Teaching Using Neural Networks. In N. Wang, G. Rebolledo-Mendez, V. Dimitrova, N. Matsuda, & O. C. Santos (Eds.), *Artificial Intelligence in Education. Posters and Late Breaking Results, Workshops and Tutorials, Industry and Innovation Tracks, Practitioners, Doctoral Consortium and Blue Sky* (pp. 403-408). Cham: Springer Nature Switzerland. https://doi.org/10.1007/978-3-031-36336-8_63
- Flathmann, C., Schelble, B. G., Rosopa, P. J., McNeese, N. J., Mallick, R., & Madathil, K. C. (2023). Examining the impact of varying levels of AI teammate influence on human-AI teams. *International Journal of Human-Computer Studies*, 177, 103061. <https://doi.org/10.1016/j.ijhcs.2023.103061>
- Kalam, A., Goi, C. L., & Tiong, Y. Y. (2023). Student motivations for social media use and their effects on academic performance-a meditational approach in emerging market. *Interactive Technology and Smart Education*. <https://doi.org/10.1108/ITSE-09-2022-0115>
- Kim, Y. (2020). Organizational resilience and employee work-role performance after a crisis situation: exploring the effects of organizational resilience on internal crisis communication. *Journal of Public Relations Research*, 32(1-2), 47-75. <https://doi.org/10.1080/1062726X.2020.1765368>
- Kumar, J. A., Muniandy, B., & Wan Yahaya, W. A. J. (2019). Exploring the effects of emotional design and emotional intelligence in multimedia-based learning: an engineering educational perspective. *New Review of Hypermedia and Multimedia*, 25(1-2), 57-86. <https://doi.org/10.1080/13614568.2019.1596169>
- Michailidis, N., Kapravelos, E., & Tsiatsos, T. (2022). Examining the effect of interaction analysis on supporting students' motivation and learning strategies in online blog-based secondary education programming courses. *Interactive Learning Environments*, 30(4), 665-676. <https://doi.org/10.1080/10494820.2019.1678487>
- Mohd, C. K. N. C. K., Mohamad, S. N. M., Sulaiman, H. A., Shahbodin, F., Rahim, N. R., & Aizudin, A. (2023). A Review of Gamification Tools to Boost Students' Motivation and Engagement. *Journal of Theoretical and Applied Information Technology*, 101(7), 2771-2782. <http://www.jatit.org/volumes/Vol101No7/26Vol101No7.pdf>

- Moquin, R., K. Riemenschneider, C., & L. Wakefield, R. (2019). Psychological contract and turnover intention in the information technology profession. *Information Systems Management*, 36(2), 111-125. <https://doi.org/10.1080/10580530.2019.1587574>
- Murata, A., Goldman, D. E., Martin, L. J., Turnnidge, J., Bruner, M. W., & Côté, J. (2022). Sampling between sports and athlete development: A scoping review. *International Journal of Sport and Exercise Psychology*, 20(6), 1752-1776. <https://doi.org/10.1080/1612197X.2021.1995021>
- Naz, S., Hafeez, Z., & Lodhi, I. (2023). Exploring the Entrepreneurial Intention, Expectations of Success and Self-efficacy among the Students of Physical Education and Sports Sciences in Pakistan. *Global Educational Studies Review*, 8(8), 91-101. [https://doi.org/10.31703/gesr.2023\(VIII-II\).09](https://doi.org/10.31703/gesr.2023(VIII-II).09)
- Papastaikoudis, F., Collins, R., & Collins, D. (2023). Blank canvas or under construction? Examining the pre-academy experiences of young developing professional team sports athletes. *Frontiers in Sports and Active Living*, 5, 990617. <https://doi.org/10.3389/fspor.2023.990617>
- Qi, C. (2019). A double-edged sword? Exploring the impact of students' academic usage of mobile devices on technostress and academic performance. *Behaviour & Information Technology*, 38(12), 1337-1354. <https://doi.org/10.1080/0144929X.2019.1585476>
- Sharma, S., & Gupta, B. (2023). Investigating the role of technostress, cognitive appraisal and coping strategies on students' learning performance in higher education: a multidimensional transactional theory of stress approach. *Information Technology & People*, 36(2), 626-660. <https://doi.org/10.1108/IITP-06-2021-0505>
- Turner, M., Miller, A., Youngs, H., Barber, N., Brick, N., Chadha, N., Chandler, C., Coyle, M., Didymus, F., & Evans, A. (2022). "I must do this!": A latent profile analysis approach to understanding the role of irrational beliefs and motivation regulation in mental and physical health. *Journal of sports sciences*, 40(8), 934-949. <https://doi.org/10.1080/02640414.2022.2042124>
- Wang, X.-M., Hu, Q.-N., Hwang, G.-J., & Yu, X.-H. (2022). Learning with digital technology-facilitated empathy: An augmented reality approach to enhancing students' flow experience, motivation, and achievement in a biology program. *Interactive Learning Environments*, 1-17. <https://doi.org/10.1080/10494820.2022.2057549>
- Won, D., Chiu, W., & Byun, H. (2023). Factors influencing consumer use of a sport-branded app: The technology acceptance model integrating app quality and perceived enjoyment. *Asia Pacific Journal of Marketing and Logistics*, 35(5), 1112-1133. <https://doi.org/10.1108/APJML-09-2021-0709>
- Wright, D. J., Frank, C., & Bruton, A. M. (2022). Recommendations for combining action observation and motor imagery interventions in sport. *Journal of Sport Psychology in action*, 13(3), 155-167. <https://doi.org/10.1080/21520704.2021.1971810>
- Xie, K., Vongkulluksn, V. W., Lu, L., & Cheng, S.-L. (2020). A person-centered approach to examining high-school students' motivation, engagement and academic performance. *Contemporary Educational Psychology*, 62, 101877. <https://doi.org/10.1016/j.cedpsych.2020.101877>
- Xing, X., Zhong, B., Luo, H., Rose, T., Li, J., & Antwi-Afari, M. F. (2020). Effects of physical fatigue on the induction of mental fatigue of construction workers: A pilot study based on a neurophysiological approach. *Automation in Construction*, 120, 103381. <https://doi.org/10.1016/j.autcon.2020.103381>
- Xu, W., Liang, H.-N., Zhang, Z., & Baghaei, N. (2020). Studying the effect of display type and viewing perspective on user experience in virtual reality exergames. *Games for health journal*, 9(6), 405-414. <https://doi.org/10.1089/g4h.2019.0102>
- Yadav, J., Misra, M., Rana, N. P., & Singh, K. (2022). Exploring the synergy between nano-influencers and sports community: behavior mapping through machine learning. *Information Technology & People*, 35(7), 1829-1854. <https://doi.org/10.1108/IITP-03-2021-0219>
- Yue, C. A., Men, L. R., & Ferguson, M. A. (2021). Examining the effects of internal communication and emotional culture on employees' organizational identification. *International Journal of Business Communication*, 58(2), 169-195. <https://doi.org/10.1177/2329488420914066>
- Zou, Y., Zhang, X., Zheng, W., & Huang, Z. (2023). Exploring the sustainable influencing factors of audience loyalty of Chinese sports live broadcast platform based on SEM model. *Technological forecasting and social change*, 189, 122362. <https://doi.org/10.1016/j.techfore.2023.122362>