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EVENT MANAGEMENT STRATEGIES ON ATHLETE PERFORMANCE: MEDIATED-MODERATED MODEL IN MARTIAL ARTS FEDERATIONS (TAEKWONDO AND BOXING)

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ABSTRACT

This paper focuses on exploring the multifaceted interaction between event management strategies, fan engagement, and wearable technology in relation to the performance of athletes in martial arts federations (taekwondo and boxing) in Jordan based on the theoretical framework of resource-based view. The research design adopted was quantitative and cross-sectional and the data was collected using an online structured questionnaire using stratified random sampling on 242 athletes, coaches, and sports media professionals. The results indicate that event management strategies have a significant positive impact on not only athlete performance H1 supported but also fan engagement H2 supported, but not on fan engagement H3 rejected, critically, the research indicates a significant mediation effect of fan engagement, which transmits the positive effect of event management strategies on athlete performance H4 supported. Moreover, wearable technology is validated as a strong moderator, which enhances the positive correlation between event management strategies and performance H5 in athletes significantly. The implications of the study to the literature on resource-based view include the empirical validation of the synergetic nature of tangible (event management), intangible (fan engagement), and technological (wearable technology) resources as key drivers of competitive advantage in sports. the study offers practical solutions on how federations can strategically manage their events and incorporate technology to maximize athletic performance.

KEYWORDS: Event Management Strategies, Athlete Performance, Taekwondo and Boxing Federations, Fan engagement, Wearable technology, Resource-based view.

1. INTRODUCTION

In a world that is rapidly becoming a very competitive sporting environment, the search of the best performance by the athletes has taken a central command in the agenda of the federation, teams and even individual athletes (Schlawe, Christiansen et al. 2025). The combination of high-quality training techniques, high-level technological interventions, and dynamism in the strategies of interaction with fans constructs the environment where athletes prepare and play (Zhu, Wu et al. 2024). The worldwide focus on performance optimization is not only in the context of winning but also in the context of creating a sustainable athletic growth, improving the experience of spectators, and stimulating economic expansion of the sports industry (Yang, Xu et al. 2024).

Taekwondo and Boxing, as integral components of the martial arts industry, with its remarkably long history and variety of practices offers a particular opportunity to observe these forces (Sousa, Beltrán et al. 2024). Martial arts, specifically taekwondo and boxing, federations all across the globe are continuously trying to find new ways to enhance the performance of their athletes, bring in and keep loyal fans as well as successfully organize exhibitions where their sport can be seen (Gabriel 2025, Rusdiawan, Fajar et al. 2025, Tu, Zhong et al. 2025, Wu 2025). The complex interdependence between event management practices, fan experience, and wearable technology adoption is also significant in determining the competitive advantage and general achievement of martial athletes (Ciaccioni, Lee et al. 2025).

In the Middle East and Jordan in particular, taekwondo and boxing are an industry that is growing and professionalizing at a tremendous rate (Al-Zughailat 2022, Hammad, Hammad et al. 2022). The martial arts specially taekwondo and boxing federations in Jordan are now going to a greater extent of investing in new training centers, foreign coaches and proper planning of events in order to take their competitors to the next level both regionally and internationally (Bayyat and Abu-Muili 2021, Hammad, Almbaidin et al. 2022). The localized setting offers a good understanding of how the certain interventions and environmental conditions affect the performance of athletes and it can be used to promote the development of national policies and practices in the area of sports (Kim 2010, Hoelbling 2024).

In this research the athlete performance is a multidimensional construct that includes physical prowess, mental, technical, and strategic

performance. It is not just about personal success, as it generates pride in the nation, motivation in the youth to take part and make the sport more attractive and viable in general (Hammad, Alnawayseh et al. 2024, Scamardella, Limone et al. 2025). The quality of organization of the event, the stimulating effect of the fans on athletes, and the information insights offered by high-tech wearable devices directly affect the possibilities of athletes to always play at the highest level (Xie, Chang et al. 2022). This is achieved through effective event management strategies which assure fair competition, optimum logistical support and environment which would help the athletes shine. Strong fan involvement produces a shocking mood, which gives a psychological boost and financial resources needed to support the sport ecosystem (Ghazzawi, Amawi et al. 2023). At the same time, wearable technology integration has never provided bigger prospects of real-time performance control, injury avert and tailored training modifications, which directly influence the physical and technical preparedness of an athlete (Hammad, Almbaidin et al. 2022, Rauma 2022).

The current research is based on the theory of the Resource-Based View (RBV) according to which the firm competitive advantage is due to the resources and capabilities that are unique to a firm (Barney 1991). When it comes to the sporting activity, federation may be considered as the organizations which utilize different resources, including, but not limited to, effective event management protocols, a robust fan base, and state of the art technology, to create the capabilities that will help performance of the athletes. Through proper management of these resources, federations will be in a position to provide a sustainable environment to athletic excellence (Barney 1991, Choi, Chung et al. 2023). The research contributions are likely to be two-fold as it, theoretically, will extend the usage of RBV to the model of sports management, specifically taekwondo and boxing, by clarifying how particular resources convert into performance results. In practice it will provide viable recommendations to martial arts federations in Jordan and other parts of the world to streamline their strategies in developing their athletes to achieve success in competitions (Pianese 2021, Chutipongdech and Kampitak 2022). The objective of this research is to examine the direct and indirect influence of event management strategies, fan management and wearable technology on the performance of the athlete in martial arts, specifically taekwondo and boxing federation in Jordan. This study aims to learn how these are combined to affect the success and growth of

taekwondo and boxing federation.

Although there is an increased interest in the field of sports management and athlete development, the combined effect of event management, fan engagement, and wearable technology on athlete performance in taekwondo and boxing, especially in the developing sports economies, such as Jordan, has a remarkable lack of knowledge (Chutipongdech and Kampitak 2022, Manoli 2024, Jordan, Myasnikova *et al.* 2025). The available literature tends to investigate these factors separately or in a more traditional context and it is a gap in understanding the synergistic impacts of these factors in a niche but a fast-developing field. Moreover, the exact ways in which these factors are combined to generate performance success of an athlete in a culturally different environment like Jordan has not been discussed in detail, which restricts local federation to introduce evidence-based approaches to performance enhancement (Ratten 2020, Chutipongdech and Kampitak 2022, Seçkin, Ateş *et al.* 2023).

1.1. Research Gaps

Even though the current literature on sports management and athlete development has expanded, there are still numerous research gaps that remain critical especially in regard to combined effects of different variables on the performance of athletes in particular situations (Baker and Horton 2004, Seshadri, Li *et al.* 2019, Hammerschmidt, Calabuig *et al.* 2024). To begin with, although individual studies have examined the impact of event management approaches, fan participation, or wearable technologies on athletic performances, there are also a significant deficiency of research that includes the synergistic impact of these three factors (Chutipongdech and Kampitak 2022). The current body of literature tends to individualize such aspects, which do not reflect the complicated interaction that can be observed in the real-life sport setting (Koenigstorfer 2023). This piecemeal methodology restricts the comprehensive knowledge of how federations can manage to maximize their resources to create the best performances by athletes (Seshadri, Li *et al.* 2019, Hammerschmidt, Calabuig *et al.* 2024). Particularly, the available empirical data to substantiate the connection between the joint presence and effectiveness of event management, fan engagement, and wearable technology to produce a stronger impact on athlete performance, as opposed to all three factors, are lacking (Yoshida, Biscaia *et al.* 2023). It is important to comprehend such interdependencies to create comprehensive

approaches that can be used to exploit athletic potential, especially in a taekwondo and boxing type of sports where both mental and physical training is equally important (Özsarı, Kara *et al.* 2024). Without such integrated studies, there is a huge gap in the strategic planning of sports organizations (Chutipongdech and Kampitak 2022, Yoshida, Biscaia *et al.* 2023, Hammerschmidt, Calabuig *et al.* 2024).

Furthermore, a large part of the available literature has been focused on those sports and developed economies that lacks a substantial gap on the dynamics of these forces in the emergent sports industries and developing markets (Hammerschmidt, Calabuig *et al.* 2024). Although taekwondo and boxing field is highly popular worldwide and is becoming increasingly professional, it is underrepresented in scholarly research related to these combined aspects (Gammelsaeter and Anagnostopoulos 2022, Chen and Morazuki 2025). Such negligence is especially significant in such areas as the Middle East, and particularly Jordan where the socio-cultural specifics, financial factors, and the specifics of sports facilities can considerably change the influence and efficiency of these elements (Bilohur, Skrypchenko *et al.* 2022). Such regional specific research studies are essential in formulating context-sensitive solutions and policies that are indeed effective since the results of sports that are highly commercialized or even based in the West may not be directly applicable (Ouyang, Lee *et al.* 2022, McHugh and Davenport 2024). The peculiar issues and prospects of martial arts as taekwondo and boxing federations in Jordan require the specific investigation that can help inform the local sports development programs and enrich the existing knowledge of sports management in various contexts. This rationality is usually ignored and so the generalized recommendations that are given do not always apply and work in various cultural and economic environments (Bodin, Teare *et al.* 2022, Xing 2022, Mistar, Setiakarnawijaya *et al.* 2023, Chen and Morazuki 2025).

Lastly, even though theoretical models (such as the Resource-Based View (RBV) have been implemented in different business and management settings, their use on the sports management spectrum, and specifically on how non-tangible resources, like fan engagement and technological capacity, have an impact on athlete performance, is young (Choi, Chung *et al.* 2023, Rögård 2025). Empirical research is required, which not only acknowledges the existence of the relationships between these factors but also provides theoretical

basis of such relationships, thus contributing to not only the theory of sports management, but also the literature of the RBV (Winand, Rihoux et al. 2013, Kero and Bogale 2023). In particular, the role of RBV in explaining the strategic worth of fan engagement as an intangible resource and wearable technology as a technological capability in improving the performance of athletes in martial arts specially taekwondo and boxing federations, was not fully investigated (Chutipongdech and Kampitak 2022, Sotiriadou and De Bosscher 2024). This is furthered to the knowledge about the mediating and moderating functions of the said factors in an RBV framework that would be able to give a stronger theoretical account of how federations are able to leverage their own unique resources in order to gain competitive advantages in the development of athletes (Winand, Rihoux et al. 2013, Sotiriadou and De Bosscher 2024). Through addressing these gaps, a more detailed and practical insight on how sports federations can improve the performance of athletes around the world will be offered, which will represent a solid theoretical basis of the practical interventions and subsequent studies. The existing theoretical knowledge is not usually fruitful when describing the intricate interaction of these resources in an evolving sports setup.

2. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

Peak performance in competitive sporting activities, especially highly competitive sports which involve high intensity factors such as martial arts is a complicated combination of the internal factors of the athlete and external environmental factors (Miragaia, Ferreira et al. 2023). This paper dwells on three important external constructs event management strategies, fan engagement, and wearable technology and their role in influencing athlete performance. The review forms the theoretical basis of the direct, mediating and moderating connections between these variables, which eventually results in five testable hypotheses that can be empirically tested in the framework of the martial arts industry in Jordan.

2.1. *Event Management Strategies and Athlete Performance*

The event management strategies cannot be seen as simply as logistical exercises but rather as a basis of providing high-quality competitive environment, which is entrenched in the stress-reduction theory and the resource allocation model (Balk, De Jonge et al. 2018, Sun 2024). The literature has continuously proved that organizational quality of a sporting

event is an important antecedent to psychological and physiological preparedness of athletes toward the event and spectator experience (Xu and Sato 2025).

Under such a circumstance, when the events are carefully organized, including all aspects of the competitive experience, such as the quality of the venue, the timeliness of schedule, effective communication, and effective logistical services (e.g., accommodation, transport, and medical services), the number of extraneous stressors is significantly reduced (Roberts and Paquette 2021). These are non-competitive stress factors that are known to cause the release of hormones of stress such as cortisol that cause exhaustion of cognitive resources and decreased ability of decision-making. Reducing such organizational frictions, better event management strategies ensure that athletes do not have to spend their limited cognitive and emotional resources, but rather more focus and commitment are devoted to the performance strategy implementation (Tossici, Zurloni et al. 2024). Moreover, the perceived fairness and consistency of refereeing is equally an essential part of event management approaches that directly affect the sense of psychological safety and control of an athlete. Peak physical preparation is also directly assisted by the offering high-quality, accessible support facilities, including special and well-fitted warm-up rooms and professional medical staff, which proves the evident, immediate connection between organizational quality and athletic performance (Fitriana and Xin 2019, Mor, Khera et al. 2023).

Besides the sports influence, a better event management strategy is also a key ingredient of fan engagement which can be viewed through the service quality frameworks modified to the sports sector (Fitriana and Xin 2019). A structured event will give the audience a smooth and pleasant experience, which will involve aspects that are not necessarily about the activity on the floor or in the ring (Previati 2020). These aspects are the convenience in buying tickets, comfort and accessibility of venue, legible wayfinding and communication, in-venue entertainment, and efficient crowd control (Yoshida, Gordon et al. 2025). All this can be added together to make the event as a whole seem that much more valuable, which is a strong indicator of fan loyalty, attendance retention and emotional engagement. Thus, organizational quality of the event presents the biggest physical and experiential platform through which fans interact and become loyal, and event management strategies are an inevitable predecessor of effective engagement with the fans (Nikolaou,

Konteos et al. 2025, Yoshida, Gordon et al. 2025).

H1: Event Management Strategies positively and directly affect Athlete Performance

H2: Event Management Strategies positively and directly affect Fan Engagement.

2.2. Fan Engagement and Athlete Performance

The role of fan engagement in the performance of athletes is complex and extensive and is achieved mainly by psychological and motivational processes based on the social identity theory and self-efficacy theory (Roberts and Paquette 2021). The existence of the supportive and interested audience can produce a strong social atmosphere that can contribute to the improvement of the morale, self-confidence and intrinsic motivation of an athlete considerably (Widorotama 2024). This effect has been termed as the home advantage effect wherein mass energy and positive reinforcement by the audience is used as a psychological resource. Athletes usually complain that they are energized by their fan base, which translates into an increased effort, a stronger ability to endure and a desire to push their bodies and minds to the limit, especially in situations when the pressure is high or when they are feeling tired (Gershgoren, Levental et al. 2022).

The spirited lift of the fan support has a direct positive impact on the self-efficacy of an athlete, the conviction in his / her ability to perform well in a particular situation. The athletes feel motivated to maintain a strong, positive social identity associated with a team or a sport when they think that this identity is strongly positively connected with the society (Widorotama 2024). In addition, fan interaction, which is made easier by digital platforms and social media, adds an important emotional support and acknowledgment. This long-term relationship leads to a feeling of belonging and community, which makes the athlete feel better about himself and his long-term devotion to his or her sport (Yoshida, Gordon et al. 2025). The concentrated attention of observers in the individualistic and mentally challenging environment of martial arts can be a decisive factor in the concentration and mental toughness of an athlete, and this may give the marginal gain that may result in winning close matches (Schlawe, Christiansen et al. 2025). The motivational and emotional rewards out of fan interaction are therefore essential to attain high-performance mindset.

This gives rise to the second hypothesis of direct effect of social support:

H3: Fan Engagement positively and directly

affects Athlete Performance.

2.3. Fan Engagement Mediation of Event Management Strategies and Athlete Performance

The mediation model suggests that there is a causal chain whereby the strategies of event management determine the athlete performance via mediating the intervening variable of fan engagement (Legaz-Arrese, Moliner-Urdiales et al. 2013). To begin with, it is an essential antecedent, proper event management, which offers a quality well structured environment, which maximizes the spectator experience.

This attribute of an organization makes it easier to engage fans positively, since more spectators will be interested in actively engaging in the event and being supportive once the event is professionally implemented (Bilohur, Skrypchenko et al. 2022). Additional, Fan engagement is the mental force that influences the performance of the athletes positively. The presence of a positive and cheering crowd increases the morale, confidence and self-efficacy of an athlete and provides the high-energy psychological setting that promotes competition performance (Legaz-Arrese, Moliner-Urdiales et al. 2013, Widorotama 2024).

The sequential connection is the key component of this mediation model, whereas Event Management Strategies create the required grounds on which successful event can be held, Fan Engagement is what changes these grounds to real performance benefits (Kim 2021). Essentially, a properly structured event minimizes external demands and hassles, yet the emotional and inspirational stimulus that accompanies a captivated audience is that which actively transforms this business atmosphere into a better athletic performance.

Fan Engagement is therefore the psychological process which transforms organizational quality into athletic results (Legaz-Arrese, Moliner-Urdiales et al. 2013, Kim 2021). As such, the mediation effect plays a critical role in explaining the holistic effects of event management, which points out that the gains go beyond the logistical coordination to the psychological gains of the spectator experience (Legaz-Arrese, Moliner-Urdiales et al. 2013, Alawamreh, Obeidat et al. 2025, Chen and Huang 2025).

And this promptly gives the fourth hypothesis which is a mediating effect:

H4: Fan Engagement mediates the relationship between Event Management Strategies and Athlete Performance.

2.4. The Moderating Role of Wearable Technology

Although the external basis of success is event management strategies that can alleviate the logistic stress and increase the competitive environment, it is also true that how much of an athlete can take advantage of these factors depends on how they use wearable technology (Petrović, Milovanović et al. 2015, Glebova, Gerke et al. 2023, Wang 2025). The proposed wearable technology in this model of research is presented as a moderator, which implies that it has an effect on the strength of the relationship between the organizational quality of the event and the resultant athletic performance.

This moderation is theoretically grounded on the biofeedback model and information processing theory. Professional management of an event, which entails access to warm-up facilities in a timely manner, a stable environmental situation and a smooth logistics system, a window of opportunity to give the best performance is created (Herold, Breitbarth et al. 2020, Lutz, Memmert et al. 2020). Nevertheless, internally pre-competition anxiety or subjective wrong perceptions of his / her own preparedness may be faced by athletes that lack objective data (Wang 2025). Wearable technology can fill this gap, as it offers real-time, objective physiological information (e.g. heart rate variability, recovery scores and metabolic rates) that will indicate that the athlete is physically aligned with the best environment presented by the event

management (Seshadri, Thom et al. 2021, Wang 2025).

In particular, the effect of better event management strategies on the performance of athletes is postulated to be much greater in the case of athletes who use wearable technology. To these sportsmen, the technology is a performance multiplier. It enables it to objectively confirm that the stress-reducing interventions by the organizers of the event (e.g., efficient scheduling and quality facilities) are effectively converting to a state of physiological preparation. The athlete will be able to use the high-quality competitive platform to the fullest, through the ability to perform micro-adjustments in their warm-up or intensity, due to access to accurate data. Conversely, with athletes who do not make use of such technology, these advantages of an event that is well managed can be partially wasted by lack of objective self-awareness or control over the process of physical responding to the environment (Li, Kling et al. 2016, Lutz, Memmert et al. 2020, Alzahrani and Ullah 2024).

Consequently, Wearable Technology is not only a way of enhancing training, but an important moderating factor in the competitive field that can help athletes to use the performance-enhancing capabilities of a well-organized sporting event to the fullest (Lutz, Memmert et al. 2020, Alzahrani and Ullah 2024).

H5: Wearable Technology moderates the relationship between Event Management Strategies and Athlete Performance

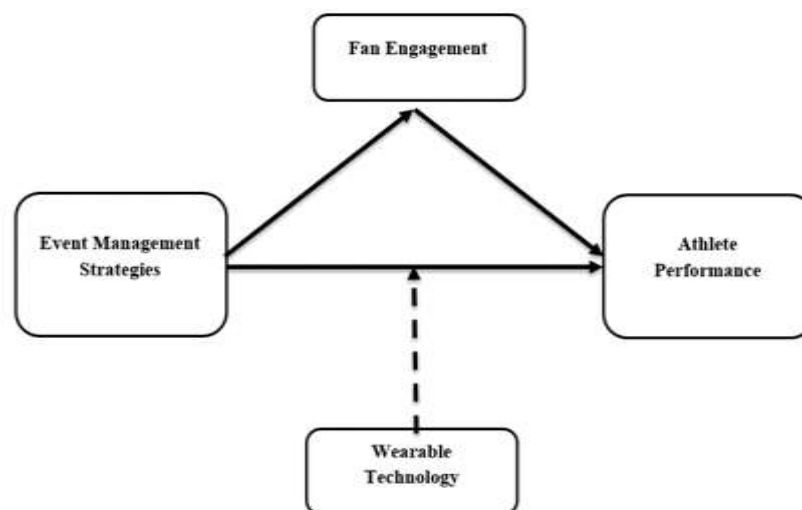


Figure (1) Proposed Research Model

3. METHODOLOGY

3.1. Research Design

In this study, the research design applied will be

a quantitative research design whereby a survey will be used to gather data on martial arts athletes and officials in Jordanian federations (Alawamreh, Obeidat et al. 2023, Sweidan, Alawamreh et al. 2026).

It will choose a cross-sectional design to identify the perceptions and experience at a single time, and establish the relationship between event management strategy, fan engagement, wearable technology, and performance of an athlete. The study is appropriate in testing the proposed hypothesized relationships and make generalizable knowledge in the targeted population.

3.2. Population And Sampling

The sampled population in the study is martial arts sportsmen, coaches, and sports media persons actively engaged in taekwondo and boxing in Jordan. The Federation officials are intentionally left out so as to keep the focus of the study on individuals directly involved in training, competition and sports communication in these fields. Taking into account the balanced representation of the three groups of participants (athletes, coaches, and media professionals) and various levels of competitions (national and international) a stratified random sampling method is used (Creswell and Creswell 2017). The stratification will make the sample more representativeness because it will minimize the bias and take into consideration the variability among subgroups within the martial arts community. The sample of the study is 200 participants, which is regarded as sufficient to determine the formulated hypotheses, given a medium effect size, a significance level of 0.05, and a statistical power of 0.80, which is in accordance with the generally accepted methodological principles in research within the sport and social science. In addition, the ethical considerations are strictly followed during the course of research. They all are aware of the study purpose, and informed consent is taken before data collection. It is confidential and anonymous and all the participation is voluntary (Lakens 2022, Al-Shaikh, Alsarawi *et al.* 2025, Alawamreh, Musleh *et al.* 2025, Alawamreh, Obeidat *et al.* 2025).

3.3. Data Collection

A structured questionnaire will be used as a method of collecting primary data online. These questionnaires will have a number of sections within them, which will include demographic data and scales of the major constructs of event management strategies, fan engagement, wearable technology, and athlete performance (Alawamreh, Obeidat *et al.* 2023, Alzahrani and Ullah 2024). The pilot study shall be carried out on a small sample of participants to determine the clarity, reliability and validity of questionnaire items prior to full-scale data collection. The period within which data will be gathered will

be about four to six weeks where non-respondents will be reminded to complete the questionnaires to provide the highest response.

3.4. Instrument And Measurement

All the constructs will be measured using the available scales modified to suit the context of Taekwondo and Boxing in Jordan. All the perceptual measures will be measured on a 5-point Likert scale, with 1 (Strongly Disagree) to 5 (Strongly Agree). The items of the factors in the instrument are described as below (Alawamreh, Alomyan *et al.* 2025, Alawamreh, Musleh *et al.* 2025).

The items that are used to measure event management strategies are adapted based on the literature on sports event management, and a special focus is put on the aspects that have an impact on the experience and performance of athletes in the areas of taekwondo and boxing (Masterman 2014, Parent and Ruetsch 2020). The scale assesses the perceptions of the quality of the organization of events using statements concerned with professional management, sufficiency of facilities and equipment, clarity of competition schedules, justice of officiating, and the availability of necessary support services including medical care, hydration, and rest accommodation. An overall evaluation of whether the environment of the event is believed to be supportive of optimum athletic performance is made through these items.

The fan engagement scales are modified with taekwondo and boxing events in Jordan to evaluate fan involvement. The items portray the perceived effects of fan attendance and engagement, either online or in real life, on the motivation, confidence, and psychological preparedness of athletes. Perceptions of fan encouragement, emotional bonding with fans, and impact of fan support on increasing morale, competitive experience, popularity of taekwondo and boxing in Jordan are the examples of the sample items (Yoshida, Gordon *et al.* 2014, Portaluri, Lock *et al.* 2025).

The wearable technology construct assesses the perception of athletes regarding the usefulness and effect of wearable devices on training and competitive performance. Using technology acceptance and sports technology materials, the items include the degree of wearable technology use, perceived value of performance data, and the influence of real-time feedback on enhancing training efficiency, injury prevention, and physical and technical development. The scale also discusses whether athletes consider wearable technology as giving them a competitive edge (Davis 1989,

Alawamreh, Obeidat et al. 2023).

The perceived performance of athletics is evaluated based on self-reported measures that are often used in sport psychology and management studies. The participants rate their physical readiness, technical consistency, concentration, mental toughness, and satisfaction with the overall performance patterns and their belief in their ability to reach maximum performance in taekwondo and boxing matches (Worsey, Espinosa et al. 2019, Weinberg and Gould 2023).

4. RESULTS AND FINDINGS

The total number of questionnaires issued was 250, with 242 valid responses left to be analyzed with the help of SmartPLS. This is a sufficient sample size to use in PLS-SEM. In the process of measuring model evaluation (Figure 2), the indicators whose

factor loading fell below the recommended value of 0.70 were deleted in an effort to improve the quality of measurement (Cepeda-Carrión, Hair et al. 2022, Alhatmi, Eishah et al. 2024, Hammadi, Mohadat et al. 2024). In that connection, FE5, FE6 and EMS5 were not to be subjected to further analysis. Table (1) illustrates the results of reliability and convergent validity. The value of Cronbach alpha and composite reliability (rho a and rho c) show that all constructs have satisfactory internal consistency reliability of above 0.70 the recommended minimum. Moreover, all the Average Variance Extracted (AVE) values exceed the 0.50 point which substantiates the adequate convergent validity (Cepeda-Carrión, Hair et al. 2022). All these findings in general show the reliability and validity of the refined measurement model and hence its appropriateness in the future analysis of structural models.

Table (1): Construct Reliability and Validity.

	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)
Athlete Performance	0.907	0.907	0.935	0.782
Event Management Strategies	0.824	0.827	0.884	0.655
Fan Engagement	0.810	0.811	0.875	0.637
Wearable Technology	0.906	0.912	0.927	0.679

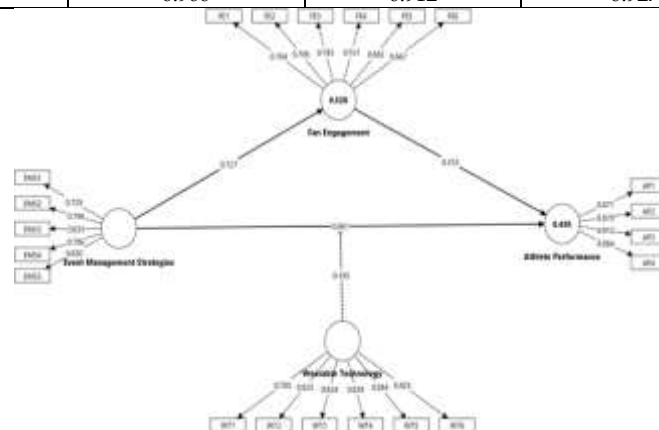


Figure (2): Evaluation of Measurement Model.

Table (2) gives the assessment of the discriminant validity based on the Fornell-Larcker criterion. The inter-construct correlations of each construct are less than the square root of the Average Variance Extracted (AVE) displayed in the diagonal (Fornell and Larcker 1981, Alawamreh, Obeidat et al. 2023).

This shows that every construct has greater variance with its indicators compared to other constructs thus supporting sufficient discriminant validity between athlete performance, event management strategies, fan engagement, and wearable technology.

Table (2): Discriminant Validity Fornell-Larcker Criterion.

	Athlete Performance	Event Management Strategies	Fan Engagement	Wearable Technology
Athlete Performance	0.884			
Event Management Strategies	0.400	0.810		
Fan Engagement	0.388	0.721	0.798	
Wearable Technology	0.632	0.490	0.601	0.824

Table (3): Model of Fit.

	Saturated model	Estimated model
SRMR	0.062	0.093
d_ULS	0.657	1.473
d_G	0.283	0.336
Chi-square	388.806	445.495
NFI	0.858	0.837

Table (3) shows the indices of model fit of saturated and estimated models. The saturated (0.062) and estimated (0.093) models have Standardized root mean square residual values that are equal to or less than the recommended 0.10 value, which is a good fit in the model. The d ULS and d G values are in reasonable ranges indicating that there are no significant differences in the model-implied and empirical correlation matrices. Furthermore, the Normed Fit Index (NFI) statistics are near the suggested cutoff of 0.90, which means that the proposed model has a good fit in general. The findings justify the suitability of the measurement and structural models in testing the hypothesis (Henseler, Hubona et al. 2016, Cepeda-Carrión, Hair et al. 2022).

Table (4) and figure (3) show the findings of the structural model and hypothesis testing realized by the use of bootstrapping in SmartPLS. The findings indicate that event management approaches have a

high impact on the performance of athletes (H1: 0.362 = -0.362, $t = 4.775 = 0.001$) and a positive one on fan engagement (H2: 0.748 = 0.748, $t = 23.517 = 0.001$). Nonetheless, there is no substantial direct impact of fan engagement on athlete performance (H3: 2 = -0.043, $t = 0.656, p = 0.512$), which means that H3 is rejected.

Nevertheless, there is a significant indirect (mediating) effect of fan engagement between event management strategies and performance of athletes (H4: 0.270 = -0.339, 4.316 = -0.013, $p = 0.001$), which means that there is a significant mediation effect. Moreover, the effect of interaction of wearable technology and event management strategies on the performance of athletes is positive and statistically significant (H5: 1.097, $t = 16.664, p = 0.001$), which proves that wearable technology does have a moderating effect. In general, H1, H2, H4, and H5 were supported, whereas H3 was not.

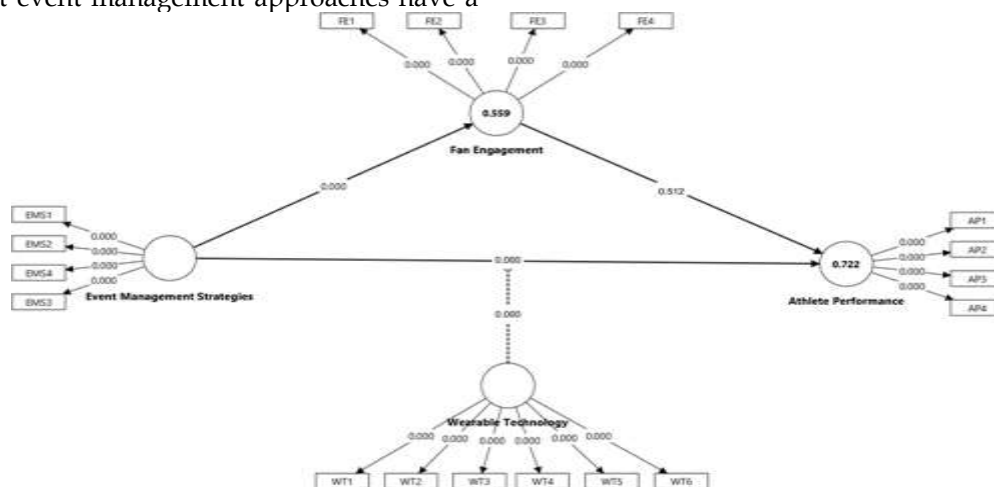


Figure (2): Evaluation of Structural Model.

Table (4): Evaluation of Structural Model - Path coefficient.

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (O/STDEV)	P values	Hypothesis
H1: Event Management Strategies -> Athlete Performance	-0.362	-0.355	0.076	4.775	0.000	supported

H2: Event Management Strategies -> Fan Engagement	0.748	0.749	0.032	23.517	0.000	supported
H3: Fan Engagement -> Athlete Performance	-0.043	-0.041	0.066	0.656	0.512	rejected
H4: Event Management Strategies -> Fan Engagement -> Athlete Performance	-0.270	-0.267	0.063	4.316	0.000	supported
H5: Wearable Technology x Event Management Strategies -> Athlete Performance	1.097	1.097	0.066	16.664	0.000	supported

5. DISCUSSION

The main purpose of the study was to test the effect of event management strategies, fan engagement, and wearable technology on the performance of an athlete in a direct, mediating and moderating way. The findings provided a detailed insight into the possibilities of federations to use their resources and capabilities in a manner that could positively impact the athletic performance. Therefore, H1, which predicted that event management strategies have a positive and direct influence on athlete performance was supported ($p = 0.000$). This result can be attributed to the literature that has highlighted the significance of an organized competitive environment in alleviating non-competitive stress and saving the cognitive resources of an athlete (Balk, De Jonge et al. 2018, Sun 2024). In earlier studies, it had already been argued that high-quality organization, such as on-time schedule, quality venue, and adequate logistics provision, is a required antecedent of the psychological and physiological readiness of the athlete (Fitriana and Xin 2019, Mor, Khera et al. 2023). The literature also suggests this in a further way in that the release of stress hormones is minimized with the reduction of organizational friction as a result of effective event management and that cognitive resources are not exhausted thus enhancing decision-making and overall performance (van Paridon, Timmis et al. 2017, Stepanyan and Lalayan 2024).

The second hypothesis H2 according to which the event management strategies are positively and directly related to the fan engagement was also highly supported ($p = 0.000$). This outcome is consistent with the service quality frameworks applied to the sports industry, as explained by the previous literature (Yoshida, Gordon et al. 2025). The physical and experiential platform of interaction between fans is the quality of the event, which includes such factors as convenience of the tickets, comfort of the venue, and effective control of the crowd. The result proves that a professionally designed event which is a fundamental ability of the federation in the resource-based perspective is an

influential precursor to successful fan engagement and loyalty (Nikolaou, Konteos et al. 2025, Yoshida, Gordon et al. 2025). Other past literature also highlights the idea that well-organized, enjoyable event experience helps motivate spectators to feel even more emotionally attached and loyal to the organization, hence developing a more powerful base of fans, which is an intangible resource to the federation (Horozoğlu and Korkmaz 2025, Lyngdoh, Manamkandath et al. 2025).

On the other hand, H3, that showed that the fan engagement has a positive and direct impact on the athlete performance, was found to be rejected ($p = 0.512$), thus indicating that, although the fan support is a strong emotional and motivational variable, it might not only have enough power to directly impact the objective or perceived performance of an athlete in martial arts. This result questions the direct concept of social identity theory and self-efficacy theory in this particular context, as proposed by (Zembura and Žyško 2015, Chifamba, Lim et al. 2025). The rejection of H3 suggests that the psychological benefit of fans, although it exists, must be structured so that it can be efficiently nurtured to produce performance results, and in the intensely personalized and mentally demanding kind of sport that taekwondo and boxing represent, the internal locus and preparation of the athlete might attenuate the direct effect of fan noise, thus the hypothesis can be a more complicated, indirect relationship.

The support of H4 has addressed this complication since it proved that fan engagement has a mediatory effect on the relationship between event management strategies and athlete performance ($p = 0.001$). This is the most important mediation result that considers the role of fan engagement. It confirms that the organizational quality of the event (event management strategies) causes the facilitation of a positive spectator experience (fan engagement) by the organizational quality, and the engaged audience then is what subsequently transforms the organizational quality into performance benefits on the athlete. The mediation effect, which support, and show that the engagement of fans is the psychological process that helps to turn the logistical

competence of the federation into sports outcomes without the background of the organization of the event, the emotional energy of fans cannot be successfully utilized to raise the morale, confidence, and self-efficacy of an athlete (Legaz-Arrese, Moliner-Urdiales et al. 2013, Widorotama 2024, Chen and Huang 2025)

Lastly, H5, which suggested the wearable technology to moderate between the event management strategies and the performance of athletes, was strongly supported ($p = 0.001$), which is a substantial addition to the literature of the resource-based view in the sports field that identifies technological capability as the multiplayer of performances. The moderation effect substantiates the positive effect of a well-managed event on performance to be much greater among the athletes using wearable technology. It is based on the biofeedback theory and the information processing theory, emphasized by past work (Seshadri, Thom et al. 2021, Wang 2025). The high-quality competitive platform presented by the event management is optimally consumed by the athlete thanks to wearable technology, the high-tech biomechanical analytic tool that provides the athlete with objective real-time physiological data due to which the athlete becomes able to perform micro-adjustments in warm-up or intensity, which ensures that the stress-reducing interventions of the event organizers are fully used (Seshadri, Thom et al. 2021, Wang 2025)

6. IMPLICATIONS

The results of this work have a number of significant implications on martial arts federations, especially in such an emerging sport as an economy as Jordan. The high correlation of the direct effect of event management and the role as an antecedent to fan engagement and performance is a strategic rationale to focus on operational excellence, whereby federations are to consider event management not as a logistical imperative but as an asset-creating ability that directly leads to competitive advantage as a resource-based view would.

The non-significance of the direct fan-to-performance relationship H3, and the significant support of the mediation relationship H4 suggest that the engagement of fans has to be management-based. development of the seamless and high-quality event experience H2 should be the primary strategy to use the support provided by fans as a competitive advantage in performance. a large crowd is not sufficient; the energy of the crowd has to be directed through professionally-managed event and the athlete should internalize the supportive experience

without being distracted.

The high moderation value of wearable technology H5 presents a strong imperative to the integration of technology as a performance-enhancing factor to include in the performance of its elite athletes. the implication is that the payoff of event management strategies increases significantly when the athletes are given the technological capability to convert the quality of the external environment into an internal physiological optimization. the suggestion is that the practice of integrating technology as a performance-enhancing factor ought to be given a priority among its elite athletes.

7. LIMITATIONS AND FUTURE STUDIES

This research has a number of limitations that, although providing avenues to future studies, contribute to its contributions. To the detriment of inferring true causality and the dynamic and longitudinal aspect of performance and fan engagement, the nature of the study was cross-sectional in that it only captured perceptions and experiences at one point in time. future studies should seek to adopt a longitudinal design that would help track the nature of the relationships over a single competitive season or multiple event cycles, thereby providing more evidence of the causal pathways.

Additional, self-report measures of physical readiness, technical consistency, and mental toughness were used to measure athlete performance, but this technique is vulnerable to common method bias and subjective interpretation. future researchers should consider using objective performance data (win-loss records, competition placement, physiological data directly captured by wearable devices) to corroborate the self-reported data. Also, the context of the study was restricted to martial arts federations (taekwondo and boxing) in Jordan, although this offered a useful, niche context in an emergent sports economy, future research should replicate the model in diverse sports and geographical settings to evaluate the strength of the resource-based view framework and the mediating, and moderating effects of the variables.

Lastly, the authors were interested in fan engagement as a mediator and wearable technology as a moderator. future research might examine reverse causality or other moderating variables. e.g., the magnitude of athlete expertise or event type (local vs. international competition) could serve as a moderator of the event management-performance relationship.

8. CONCLUSION

This study contributes to understanding how organizational practices and supportive environments influence athlete performance in competitive sport contexts. The findings emphasize the strategic importance of professional event management in creating structured and motivating conditions that enhance athlete readiness and performance.

In addition, the findings confirm the

complementary nature of wearable technology and fan engagement. The wearable technologies are an opportunity to gather performance-enhancing feedback, whereas the engagement of fans reinforces the psychological and social climate. All of these aspects together point to the necessity of a unified organizational strategy that integrates quality management, social support, and technological innovation to support sustainable development of athletes and long-term athletic success.

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