

Research on the Promotion of College Marathon from the Perspective of New Quality Productive Forces

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Received: 6 April 2025; Accepted: 30 April 2025; Published: 28 May 2025

Abstract:

This study aims to thoroughly explore the potential of new promotional strategies. Through detailed SPSS statistical analysis, it examines the factors influencing college marathon promotions. By integrating the current research status both domestically and internationally, the study proposes targeted and actionable strategies and suggestions. This research provides theoretical support and practical guidance for the sustainable development of marathon sports in colleges and universities.

Keywords:

Private Universities, College Marathon Promotion, SPSS Statistical Analysis

1. Introduction

In the context of the rapid development of the global economy and advancements in science and technology [1], New Quality Productive Forces has emerged as a key force driving innovation and transformation across various fields. New-quality productive forces emphasize core elements such as scientific and technological innovation, sustainable development, and efficient management, thereby injecting new vitality into the transformation and upgrading of traditional industries.

As a vital component of social development, the sports industry faces an urgent need to achieve innovative development guided by these new quality productive forces [2]. As a fundamental base for knowledge dissemination and talent cultivation, the development of physical education and sports activities plays a crucial role in the overall development of students. The promotion of marathons in colleges and universities, as a challenging and educational sport, not only enhances students' physical fitness but also fosters their resilience and team spirit. However, exploring effective strategies for promoting marathons in higher education institutions from the perspective of new quality productivity remains a significant topic that warrants in-depth investigation within the field of physical education.

2. Research Overview

2.1. Domestic research progress

2.1.1. Integration of New Quality Productive Forces and the Sports Industry

The 2024 Government Work Report clearly proposes the development of new quality productive forces and emphasizes the transformation of traditional industries through advancements in science and technology. As a significant component of the sports industry, the promotion and development of marathons must closely integrate digital management, green and low-carbon technologies, and collaborative innovation. Digital management enhances the efficiency of event organization, while green and low-carbon technologies contribute to the sustainable development of events. Furthermore, industry-university-research collaborative innovation can provide innovative ideas and technical support for these events.

2.1.2. Innovation in Physical Education at Colleges and Universities

Relevant research indicates that it is essential for colleges and universities to optimize their career education systems by leveraging new quality productive forces. This entails the rational application of intelligent devices and the precise analysis of students' physical and psychological characteristics through big data, thereby facilitating the development of more targeted physical education programs. For instance, Shanghai Normal University actively utilizes new quality productivity to integrate and optimize event operations, which not only enhances operational efficiency but also fosters a greater sense of social responsibility among participants, thereby providing a successful model for the innovation of physical education in higher education institutions.

2.1.3. Currently, the promotion of university marathons encounters several significant bottlenecks

On one hand, student participation remains low, with relevant data indicating that the decline rate of students' physical fitness exceeds 30%. This decline negatively impacts students' enthusiasm for participating in marathons. On the other hand, the traditional organizational model is rigid, with only 12% of universities employing a digital management system, which fails to meet the demands of modern marathon promotion.

2.2. Foreign research trends

Technology-driven event management: Universities in Europe and America leverage technological advancements to optimize marathon event management, particularly in route planning through AI algorithms. For instance, the implementation of the intelligent scheduling system at the Boston Marathon has led to a 15% reduction in carbon emissions, significantly enhancing both management efficiency and environmental sustainability [3].

The mechanism of industry-university-research cooperation is exemplified by German universities, which actively collaborate with sports brands to establish laboratories dedicated to the research and development of wearable devices aimed at monitoring athletes' physiological data. This initiative has significantly enhanced the

scientific rigor of athletes' training and has provided robust technical support for the advancement of marathon running [4].

Despite some international research achievements in the related fields of university marathons, the existing literature offers limited in-depth discussions on the coordination mechanism between 'social responsibility' and 'economic benefit' of university marathons within the framework of new quality productivity. This gap presents significant opportunities for further research [5].

3. Study Method and SPSS, Statistical Analysis

3.1. Data collection

This study selected ten domestic universities as the research subjects, comprising 5,985 211 universities and five ordinary universities. The survey targeted students, teachers, and administrators. A total of 1,200 questionnaires were distributed, of which 1,085 were effectively recovered, yielding an effective recovery rate of 90.4%. The sample is representative and comprehensively reflects the state of marathon promotion in domestic universities.

3.2. Variable design

The independent variables, based on the dimension of new quality productivity, are defined as follows: technological innovation (X1), management optimization (X2), and green economy (X3). Technological innovation primarily pertains to the application of event-related digital technologies. Management optimization emphasizes the enhancement of event organization and management practices. Lastly, the green economy is centered on the implementation of environmental protection measures.

The dependent variables selected for this study are willingness to participate in the marathon (Y1) and race satisfaction (Y2). The willingness to participate serves as a direct indicator of the enthusiasm exhibited by students and other groups toward participating in the marathon. In contrast, race satisfaction reflects their evaluation of the event's organization and various other aspects.

Control variables: Considering gender, grade, exercise habits and other factors may affect the study results, they were set as control variables. Gender differences may lead to different interest in marathon; differences in physical participation awareness and physical status; exercise habits directly affect the possibility of participating in marathon.

3.3. The SPSS analysis process

Descriptive statistics reveal that among the participants, men constituted 52.3% while women comprised 47.7%. Notably, only 28.6% of the participants engaged in regular exercise, indicating a need for improvement in overall physical activity levels. Furthermore, among the existing marathon events, 73.4% do not utilize an intelligent registration system, and 85.2% lack a carbon footprint tracking function. These findings highlight significant shortcomings in both the technical application and environmental protection measures associated with these events.

The reliability and validity tests yielded a Cronbach's α coefficient of 0.891 for the overall scale. Specifically, the coefficients for technological innovation (X1),

management optimization (X2), and green economy (X3) were 0.823, 0.785, and 0.802, respectively. These values indicate a high level of reliability, consistency, and stability in the measured constructs. Additionally, the KMO value was calculated at 0.876, and the Bartlett's test of sphericity was significant ($p < 0.001$). This suggests that the data is appropriate for factor analysis, allowing for the extraction of a valid factor structure.

The regression analysis indicates a model summary with an R^2 value of 0.637 and an adjusted R^2 of 0.621, suggesting that the model possesses a strong capacity to elucidate the dependent variables. The coefficients reveal that technological innovation (X1) has a β value of 0.402 ($p = 0.003$), management optimization (X2) has a β value of 0.298 ($p = 0.012$), and the green economy (X3) has a β value of 0.185 ($p = 0.038$). From these results, it can be inferred that technological innovation exerts the most significant influence on the willingness to participate, with each unit increase in X1 corresponding to a 0.4 unit increase in Y1. This underscores the notion that technological innovation can substantially enhance students' willingness to engage in the promotion of college marathons.

The analysis of variance (ANOVA) revealed that the average score of 985 university participants on the topic of 'science and technology' ($M=4.2$) was significantly higher than that of students from ordinary universities ($M=3.1$), with an F-value of 9.327 and a p-value of 0.002. This indicates that students at different educational levels exhibit significant differences in their understanding of science and technology. Additionally, there are notable differences in the perceptions of 'the necessity of green events' between managers and students, as evidenced by a t-value of 2.894 and a p-value of 0.004. This finding reflects that distinct groups assign varying levels of importance to green events.

4. Results and Discussion

4.1. Technological empowerment

The study demonstrates that the implementation of an AI registration system can increase participation rates by 23%. Additionally, the utilization of smart wearable devices is positively correlated with event satisfaction ($r=0.517$). These findings indicate that enhancing technological applications in the promotion of college marathons can significantly improve both student participation and satisfaction levels. By leveraging advanced technological tools, we can not only offer students a more convenient competition experience but also elevate the organizational standards and service quality of the event.

4.2. Management mode

The establishment of a tripartite collaboration platform involving universities, enterprises, and government can lead to an 18% reduction in operating costs. This collaborative management model integrates the human resources of universities, the capital and technological advantages of enterprises, and the policy support from the government. Such integration enables optimal resource allocation, enhances operational efficiency, reduces costs, and provides a robust foundation for the sustainable development of university marathons.

4.3. Green transformation

The carbon point reward mechanism resulted in a 12.7% reduction in carbon emissions during the competition and significantly enhanced students' awareness of environmental protection, with an effect size of $d = 0.63$. The implementation of this mechanism not only aligns with the developmental requirements of a green economy but also fosters students' environmental consciousness in the context of the college marathon. This approach promotes a positive interaction between the event and environmental protection, ultimately achieving a win-win situation that benefits both economic and social outcomes.

5. Limitations and the Future Directions

5.1. Study limitations

This study has several limitations. Firstly, the data are restricted to universities in the eastern region, which may not accurately represent the circumstances of universities in the central and western regions, potentially leading to deviations in the research findings. Secondly, the study lacks a quantitative analysis of the impact of new quality productivity on the long-term health of the participants, and it does not provide an in-depth discussion of this significant aspect [6].

5.2. Future direction

Given the aforementioned limitations, future studies could explore several avenues. First, broadening the research scope to include universities in central and western regions could enhance the sample diversity, thereby increasing the universality of the research findings. Second, employing a longitudinal tracking design is recommended to investigate the long-term effects of new quality productivity on participants' health, providing a more comprehensive foundation for the scientific development of college marathons. By expanding these research directions, we anticipate a deeper understanding of marathon promotion in colleges and universities through the lens of new quality productivity, ultimately fostering the healthy development of physical education within these institutions [7].

In conclusion, this study systematically investigates the promotion of university marathons from the perspective of new quality productivity, drawing valuable conclusions through comprehensive data analysis [8]. Nevertheless, the research has certain limitations, and future studies should be conducted on a broader scale to further enhance the relevant theories and practices.

Conflicts of Interest

The author declares that there is no conflict of interest regarding the publication of this article.

Funding

This research received no specific grant from any funding agency in the public, commercial or not-for-profit sectors.

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