Study on the Crisis Management Model of Mass Sports Events with Multiple Participation - A Case Study of Beijing Marathon

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Abstract. The 4R Crisis Management Model is a framework for systematically addressing crises, aiming to effectively respond to and manage crises through four key factors: reduction, readiness, response, recovery. The concept of multiple participation refers to the joint participation and cooperation involving multiple stakeholders in public affairs or project management. This paper takes the Beijing Marathon as an example to analyze the embedded practices of multi-stakeholders participation in the four dimensions of crisis management for mass sports events: crisis reduction, crisis readiness, crisis response, crisis recovery. The study found that the participation of multiple subjects played an important role in the crisis management of Beijing Marathon. In the crisis reduction stage, the probability of risk occurrence is effectively reduced through environmental monitoring, equipment improvement and personnel management; in the crisis preparation stage, an early warning system is established to ensure timely information transmission and response; in the crisis response stage, the event's image was maintained through multi-channel information dissemination and media management; in the crisis recovery stage, the event quickly resumed through facility repairs, support provision, and reflective summarization. Based on this, a crisis management model with multiple participation for mass sports events is proposed.

Keywords: 4R Crisis Management; Multiple Participation Concept; Mass Sports Events; Beijing Marathon.

1   Introduction

The mass sports events have made outstanding contributions in improving public sports services, promoting the national fitness strategy, and enhancing public health. However, as the number of events and participants increases, the challenges faced by event organizers become more complex, often accompanied by various crisis events.

   Current research defines the term "crisis" in two broad categories: outcome-based and process-based. The outcome-based perspective views a crisis as an urgent and severe sudden event, defined as a "low-probability, high-impact event perceived by key stakeholders to affect the survival capability of an organization"[1]. The pro-

cess-based perspective considers the evolution of a crisis similar to a life cycle, with a complete growth and development process from birth, growth, maturity, to demise, with different signs appearing at each stage [2]. Correspondingly, crisis management consists of a series of planned and dynamic management activities.

Sports events exhibit a clear process nature, with each stage potentially facing different degrees of crises, which are often interdependent. Thus, sports event crises are characterized by uncertainty and dynamism, making more people believe that in terms of sports crisis management, the process-based perspective can better reduce the occurrence of crises and mitigate their damage. Mass sports events have the characteristics of different levels of participants and large mass base. If crisis management for mass sports events relies solely on official channels, it is likely to be constrained by the limitations in cognition, information, resources, and interests of the managers. Therefore, it is of great significance to introduce the concept of multiple participation in the crisis management of mass sports events, fully mobilize the wisdom and strength of various stakeholders.

This paper analyzes the practice of multiple participation in the crisis management of Beijing Marathon, and summarizes the multiple participation crisis management model that can be applied to most mass sports events.

2   Research Object and Theoretical Riview

2.1   Mass Sports Events

Several scholars have defined the concept of mass sports events and summarized the basic characteristics of mass sports events: first, they belong to sports events but differ from competitive sports events, commercial sports events, and school sports events; second, the participants are non-professional athletes; third, the main purposes of participation are fitness, leisure, and entertainment; fourth, the organization forms are diversified; fifth, they can generate certain social and economic benefits[3-6].

Therefore, this paper defines the concept of mass sports events as: "A public social activity with the general public as the main participants, aiming to meet the needs for fitness, leisure, entertainment, and social interaction."

Mass sports events are usually large in scale, with a large number of participants and spectators. Once a crisis occurs, the impact is widespread, and the influence on the society is significant. Therefore, mass sports events need to pay more attention to the practice of crisis prevention and coping strategies.

2.2   4R Crisis Management

A crisis is a situation characterized by severe threat, uncertainty, and a sense of urgency. In order to effectively deal with the crisis, Robert Heath (2001) proposed the need to strengthen the management of the whole process before, during and after the crisis. Therefore, in his book " Crisis Management," he was the first to propose the 4R model of crisis management, which includes four dimensions: Reduction, Readiness, Response, and Recovery, thus constructing the 4R crisis management theory[7].

2.2.1 Reduction.

Reduction is the core content of the 4R crisis management theory and runs through the entire crisis management process. It involves a series of measures to reduce the likelihood of a crisis occurring and to minimize the damage it causes. Robert Heath believes that reduction mainly involves managing crises through four aspects: environment, structure, system, and personnel.

In addition to the above factors, Mitroff, Kilmann (2021) stress the importance of leadership in this dimension and offer a series of recommendations for managers on how to reduce risks[8].

2.2.2 Readiness.

Readiness corresponds to pre-crisis management, with the main task being to establish a comprehensive crisis warning and monitoring system. Early warning and monitoring complement each other in crisis management by monitoring specific environments and promptly sending crisis signals to system managers or relevant responsible parties to achieve early warning. In terms of crisis preparedness management for sports events, "Stadium and Event Security Planning and Risk Management" by Robert Ammon Jr. and others provides a detailed introduction to event safety planning, violence prevention, emergency medical care, and evacuation planning, enriching the content and application of readiness in sports event crisis management[9].

2.2.3. Response.

Response corresponds to in-crisis management, primarily emphasizing the reactions, strategies, and mitigation measures taken after the occurrence of a public emergency. In the realm of crisis response management, it is necessary to gather more comprehensive information and secure more time to respond to the crisis, aiming to eliminate the crisis or minimize losses. This encompasses crisis communication, media management, decision-making, and other aspects.

Coombs, W. T. (2007) conducted in-depth research on the crisis communication aspect and proposed the Situational Crisis Communication Theory (SCCT), focusing on the communication strategies in a crisis and their impact on crisis management effectiveness[10]. Mette (2015) conducted a study from the perspective of media management, focusing on the image of witnesses related to the "conflict media event".[11].

2.2.4. Recovery.

Recovery corresponds to post-crisis management, emphasizing the summary of lessons learned and the enhancement of image after the crisis has been resolved. It mainly includes recovery and reflection aspects.

Sylvia (2017) studied the mood of the public crisis one month after the Boston Marathon explosion in 2013, and proposed that the organization should promote the formation of the public positive sentiment by strengthening identity, providing diversified support, and establishing a digital community of restorative discourse, so as to realize the recovery after the crisis[12].

Overall, current research shows that the academic field has made comprehensive studies on 4R crisis management. This not only plays a crucial role in practical crisis response, but also significantly contributes to the enrichment of crisis management theory.

2.3   Multiple Participation Concept

To achieve truly effective social governance, the cooperation and interaction between the government and civil society, public and private sectors have become more frequent. Therefore, the concept of multiple participation has emerged.

Multiple participation refers to the collaborative involvement of multiple stakeholders in public affairs or project management. This concept emphasizes the joint action of different entities in decision-making, implementation, and supervision to achieve broader interest balancing and maximization of public value. Multiple participation does not mean "small government, weak government," but rather a "small government, strong government, big society" model of co-governance[13].

However, past research has mostly focused on the interactions between different levels or departments of government, or between government and enterprises, with less emphasis on the masses as a primary research subject. This paper's research object is mass sports events, with the masses being a major focus, filling a gap in existing research to some extent.

3   Research Method

According to the standard of theoretical sampling, this paper selects Beijing Marathon as a research case to systematically sort out the practice of Beijing Marathon, and further explain the relevant theoretical concepts. The so-called theoretical sampling refers to the selection of case objects according to the theoretical needs, requiring the typical cases to have many characteristics such as typical and enlightening [14].

In terms of case typicality, the Beijing Marathon is a renowned international sport event in China and has become one of the world's top 10 marathons. Its large number of participants and complex personnel composition make it representative of mass sports events, and its crisis management model is correspondingly typical and representative in China's mass sports events. In addition, the Beijing Marathon is led by the government and operated by social organizations, fully reflecting the concept of multiple participation in its management system.

In terms of case authenticity and saturation, the author also participated as a route medical volunteer in the 2022 Beijing Marathon, having firsthand experience and primary data on the event's organization and emergency response mechanisms, which can achieve the full saturation of effective information.

4   Case Analysis

Based on the framework of the conceptual definition section of this paper, this section will analyze and extend the relevant concepts using the Beijing Marathon as an example.

The predecessor of the Beijing Marathon was the Beijing International Marathon, which began in 1981. In 1998, amateur participants were allowed to compete. In 2010, the Beijing International Marathon officially aligned with international standards and was renamed the "Beijing Marathon." However, with the relaxation of marathon registration restrictions and the increasing number of participants, the risks associated with this mass sports event have also increased.

This event has experienced multiple crisis incidents, including natural weather events, accident events, social events, and emergency medical events. In recent years, with the construction and gradual improvement of the multi-stakeholder 4R model in the Beijing Marathon, the occurrence of emergencies has decreased, and their impact has been significantly reduced.

4.1   Multiple Participation in Crisis Reduction

The concept of multiple participation in crisis reduction is reflected in the collaborative measures to reduce the likelihood of a crisis occurring and to minimize potential losses. The indicators for each dimension are detailed in Table 1.

Table 1. Crisis Management Index System for Sports Events

Overall Performane	First Level Indicators	Second Level Indicators	Content description
Sports Event Crisis Management	Crisis Reduction	Environment	Route selection, extreme weather warning, traffic management, etc
		Equipment	Competition equipment, race vehicles, participating items, etc
		System	Natural events, accident events, social events, individual events, etc.
		Personnel	Event management personnel, athletes, referees, volunteers, etc
	Crisis Readiness	Information Monitoring	Environmental monitoring, media monitoring, internal information monitoring, etc
		Crisis Warning	Establish early warning index system, set early warning threshold, data analysis, etc
	Crisis Response	Communication Management	Establish a crisis communication team, transparent communication, positive guidance, etc
		Media Management	Select the appropriate release channels, public opinion analysis, etc
	Crisis Recovery	Recover	Repair the facilities, rebuild the brand image, etc
		Summary and Reflection	Event review, summary reports, organize crisis simulation drills, etc

4.1.1. Environment.

The management of Beijing Marathon reduces risks by evaluating and improving the event environment, which includes route selection, extreme weather warning, traffic management and other aspects.

A representative measure of multiple participation in crisis reduction management is traffic control on city roads. Traffic control for the Beijing Marathon begins at 7:55 am, with time-segmented and section-segmented traffic restrictions. This means not all sections are closed simultaneously; as the race progresses, sections towards the finish line are gradually controlled. Additionally, traffic control on a specific section is generally lifted within twenty minutes after the designated closure time. The organizing committee needs to quickly pick up runners who have not finished the race within the specified time.

4.1.2. Equipment.

Equipment is an indispensable hardware condition for holding sports events. The equipment involved in the Beijing Marathon includes race equipment (timing equipment, real-time information display, etc.), vent vehicles, and participants' competition items.

In 2006, the finish line timing equipment of the Beijing Marathon malfunctioned, causing staff to repair the timing equipment at the start of the race. To prevent similar situations from happening again, the organizing committee collaborated with relevant technology companies and equipment suppliers in subsequent events to upgrade the equipment, enhancing the adaptability of race equipment under various conditions. Additionally, the Beijing Emergency Management Bureau conducts safety inspections of the event venues. If issues such as the absence of clear safety warning signs or the failure to promptly clear flammable materials are found, the event organizing committee will be required to rectify these issues within a specified period.

4.1.3. System.

The Beijing Marathon organizing committee also needs to use risk reduction strategies to identify which risk prevention systems might fail and accordingly enhance them. For different emergency scenarios (Table 1.), Beijing Marathon organizing committee and Beijing Municipal Government have formulated corresponding emergency plans, setting four response levels (Level I to Level IV) based on severity. The response measures for each risk prevention system are reflected in all other management measures.

4.1.4. Personnel.

Participants in the Beijing Marathon include: event managers, athletes, referees, volunteers, etc. Currently, the large team of volunteers has become an indispensable part of the marathon's human resource management system. In terms of volunteer training, to enhance the professional level of volunteers, the Beijing Marathon organ-

izers provide systematic training covering event procedures, emergency handling, medical first aid, and foreign language communication.

4.2   Multiple Participation in Crisis Readiness

In the dimension of crisis readiness, Beijing Marathon organizers, government departments, relevant technology companies and social organizations jointly establish an early warning system and information transmission network to ensure timely warnings and rapid responses.

The 2014 Beijing Marathon faced a major challenge from weather factors - heavy smog. The Beijing Marathon organizing committee and Beijing municipal government took crisis preparation measures. At 18:00 the day before the race, Beijing municipal government officially issued a blue alert of heavy air pollution, and gave instructions to all the medical security personnel the next day, requiring them to make relevant preparations for treatment. The organizing committee urgently coordinated with the sanitation department, deployed sprinklers to reduce the dust on the road, and sent text messages to prompt all contestants to pay attention to the weather conditions and take relevant measures according to their own conditions. Although the uncontrollability of natural factors still brought a certain degree of influence to the competition organizers and the participants. However, the scheduled holding of the event has resolved the huge crisis of postponement and rescheduling of the event.

4.3   Multiple Participation in Crisis Responses

Once an emergency arises and leads to a crisis, the event organizers should collaborate with multiple stakeholders to achieve efficient crisis management.

During the 2019 Beijing Half Marathon, a participant suffered a sudden cardiac arrest but was fortunately saved through timely intervention. The Beijing Marathon organizers' response to this incident included communication management, media management, and image management.

Following the incident, the Beijing Marathon organizers immediately activated the emergency plan. On-site volunteers and medical personnel responded quickly, providing first aid to the runner and transporting them to a nearby hospital. The organizers promptly informed the public of the event's progress through the official website, social media, and race announcements. Relevant departments of the Beijing municipal government also intervened to ensure the efficiency of the rescue operation.

The organizing committee organized a press conference at the first time, explaining the event, rescue process and follow-up measures. Additionally, the media reported on the organizers' efforts to add emergency facilities along the racecourse and enhance medical support, demonstrating their commitment to participant safety.

To mitigate the negative impact of the sudden cardiac arrest incident, Beijing Marathon organizers later pledged to conduct a comprehensive review and improvement of the race's safety measures. They also collaborated with medical institutions to enhance medical support during the event. Through a series of proactive image man-

agement measures, Beijing Marathon organizers gradually restored public trust in the event.

4.4   Multiple Participation in Crisis Recovery

Once the crisis is overcome, an important task is to formulate or adjust plans, resume daily activities, and restore the normal operations of the Beijing Marathon organizers. It is also crucial to actively summarize the lessons learned and make corresponding improvements.

   During the 2014 Beijing Marathon, another sudden death incident occurred. Although on-site medical personnel quickly administered emergency treatment, they were ultimately unable to save the participant's life. Following the sudden death incident, the organizers collaborated with mental health institutions to provide psychological counseling and support services to the deceased's family and affected participants, helping them cope with the psychological trauma. In terms of summarizing and reflecting, an independent investigation team consisting of the Beijing Marathon organizers, safety consultants, and sports organizations was established to thoroughly investigate the cause of the sudden death incident, propose improvement suggestions, and publicly release the investigation report.

5   Multiple Participation Crisis Management Model

The practice of the Beijing Marathon reveals that the concept of multiple participation is fully integrated into the various dimensions of 4R crisis management. Based on the above analysis, this paper summarizes the multiple participation crisis management model (Figure 1) to innovate the theory of 4R crisis management.
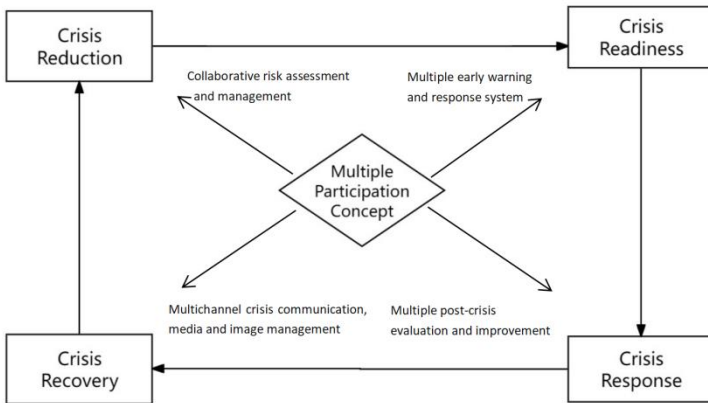

Fig. 1. Multiple Participation Crisis Management Model

5.1   Crisis Reduction Management Model

In terms of environmental management, event organizers should collaborate with multiple parties to implement various environmental management measures to reduce event risks.

Regarding equipment, event organizers collaborate with local emergency management agencies, equipment suppliers, and technology companies to jointly identify risks. Equipment suppliers provide high-quality race and supply equipment, technology companies are responsible for testing and maintaining event equipment, and local emergency management bureaus conduct safety inspections of the event venues.

People are both the managers and organizers of sports events, making personnel management crucial for crisis mitigation. Event organizers need to provide professional training for all event staff and volunteers to enhance their emergency response capabilities. Additionally, volunteer organizations and social organizations can assist event organizers in personnel allocation and management.

5.2   Crisis Readiness Management Model

In terms of information monitoring and early warning, event organizers, government departments, relevant technology companies and social organizations jointly establish an early warning system and information transmission network to ensure timely warnings and rapid response.

In terms of the transmission and response to warning information, event organizers should establish an integrated internal and external information transmission network. Through this network, government departments, event organizers, and social organizations collaborate to ensure that warning information is quickly and accurately conveyed to relevant personnel.

5.3   Crisis Response Management Model

In terms of communication management, when a crisis breaks out, the event organizers should promptly collect relevant information about the crisis event, identify the causes of the crisis, and release event information and emergency measures through multiple channels. Government departments and media platforms should jointly issue official announcements, while social organizations disseminate information via social media to ensure wide coverage and timely transmission of information.

Media management includes cooperation with mainstream and new media platforms. The event organizers should provide accurate information for the media, so as to avoid panic and misunderstanding caused by false reports and guide the public opinion.

As time progresses and the crisis is gradually resolved, Beijing Marathon organizers can analyze and explain the causes and processes of the crisis to the public, establish the organization's responsible image, and regain public confidence.

5.4   Crisis Recovery Management Model

Event organizers will accept feedback from various social sectors, evaluate the crises that occurred during the event, and investigate the causes and impact mechanisms of these crises. This research reveals shortcomings and loopholes in crisis management mechanisms, crisis warning systems, and crisis response strategies. By addressing these issues at both the organizational and functional levels, the crisis management system for major sports events can be improved. Summarizing the successes and failures of crisis management provides valuable experience for the next round of crisis management.

To sum up, the concept of multiple participation is embedded in the four dimensions of crisis reduction, crisis preparation, crisis response and crisis recovery. Through the cooperation of the relevant subjects, the risk of crisis can be effectively reduced, the efficiency of early warning and response can be improved, so as to ensure the safe and smooth progress of sports events.

6   Conclusions

This study conducts an in-depth analysis of crisis management from the perspective of multiple participation, using the Beijing Marathon as a typical case. Based on the 4R crisis management model and the actual circumstances of the Beijing Marathon, it explores specific measures and practices in the four dimensions of crisis reduction, crisis readiness, crisis response and crisis recovery. This research not only illustrates the specific methods and strategies used in large-scale sports events to handle crises, but also highlights the crucial role of multiple participation.

The involvement of multiple stakeholders played a vital role in the crisis management of the Beijing Marathon. The collaborative efforts of government departments, event organizers, technology companies, social organizations, and media ensured the effective implementation of crisis management measures. This model also provides valuable insights for other mass sports events.

However, the 4R crisis management model proposed in this paper is based on the generalization of a single case study, which has certain limitations. Whether it is applicable to other types of sports events remains to be further verified. Future research could expand the sample size to obtain more generalizable conclusions and combine quantitative studies to further validate the reliability and effectiveness of the findings.

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