

# The Perception of Olympic Agenda 2020 Recommendations of College Student Athletes in Taiwan: A Cross-sectional Study on the Implementation of the Agenda in 2021

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## Abstract

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This study is to carry out a survey through purposive sampling to understand how college student athletes in Taiwan who had at least participated in one sports event at a national level think about the Olympic Agenda 2020 after its implementation period. A total of 528 questionnaires were given out with 446 valid ones collected. The data were then analyzed through the methods of descriptive analysis, paired sample t-test, Pearson correlation analysis and importance-performance analysis (IPA).

This study found that five years after the adoption of the Agenda, athletes still value and follow the recommendations. It is crucial that the government sector and related sports associations should also take this into account. Consequently, it proved that the recommendations were developing in a positive direction. When applying IPA, none of the recommendations was in the second quadrant. This finding contrasted with the outcome in 2018 when many of the recommendations were located in quadrant B. Overall, this study demonstrated that some significant progress was made in how athletes perceive the strategic roadmap, and that the efforts made by the government sector and relevant authorities were successful.

## Keywords

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Olympic Agenda 2020, Olympic Agenda 2020+5, Olympic Education, Student Athletes

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## I. Introduction

At the 127th Annual Meeting in December 2014, the International Olympic Committee (IOC) adopted the Olympic Agenda (OA) 2020, with a total of 40 recommendations in three spheres: “Sustainable Development”, “Credibility” and “Attracting Youth” (IOC, 2014). After the announcement of the guidance, countries around the world must commit to reform, promotion and practice. Later in mid-February 2021, the IOC Executive Board proposed the new strategic roadmap, OA 2020+5. Built on the results of the OA 2020 published by the IOC in 2014, the new Agenda aims to respond to the post-coronavirus world, and a total of 5 trends and 15 recommendations are derived to determine the direction of the IOC and the Olympic Movement until 2025.

The 5 key trends are as followed (IOC, 2021): first, there is a need for greater solidarity within and among societies; second, while expanding digitalization across the globe, it is necessary to eliminate digital inequality at our best; third, it is absolutely urgent to achieve the sustainable development goals; next, organizations and institutions should strive to enhance their credibility; lastly, in the face of the financial and economic impacts of the Covid-19 pandemic, it is of vital importance to build resilience among governments and enterprises, which could determine their relevant priorities in actions.

Below are the 15 recommendations:

1. Strengthen the uniqueness and universality of the Olympic Games;
2. Promote a sustainable Olympic Games;
3. Strengthen the rights and responsibilities of athletes;
4. Continue to attract elite athletes;
5. Further strengthen safe sports and the

protection of clean athletes;

6. Enhance and promote the road to the Olympic Games;
7. Coordinate and harmonious competition calendar;
8. Improve the interaction between digital technology and people.
9. Encourage the development of virtual sports and expand their links with the video game community.
10. Strengthen the role of the Movement as an important enabler of the United Nations (UN) Sustainable Development Goals.
11. Strengthen support for refugees and displaced persons.
12. Go beyond the Olympic community and expand the connection with the external community.
13. Continue to establish a model of social and corporate citizenship.
14. Strengthen Olympic activities through good governance.
15. Establish an innovative revenue model.

When the OA 2020 was launched, the president of the IOC, Mr. Bach stated that the motto underpinning the process from identification to adoption to implementation was “change or be changed”. Based on the OA 2020, the IOC formulated the OA 2020+5, which took the opinions and feedback of relevant stakeholders and the possible consequences resulted from the pandemic into account, in the hope of seizing this chance to make changes and turn the crisis into an opportunity. The IOC Executive Board has also completed the OA 2020 Closing Report and its impact on the IOC and the Olympic Games.

According to the Sports Administration, Ministry of Education, Taiwan, the focus of the OA 2020 includes the reform of

bidding process, strengthening sports doping testing and encouraging honest athletes, assisting athletes in career planning and employment guidance after retirement, and promoting “environmental sustainability” and “gender equality”. Since 2013, the Sports Administration has commissioned the Chinese Taipei Olympic Committee to organize a course regarding career planning for athletes and channel the right talent from the pool to the job market in the sports sector. In 2015, a course aiming to raise awareness on doping in sports was conducted. In addition, the Sports Administration has been keen in promoting gender equality and thus, provides guidance to individual sports associations in Taiwan to conduct relevant courses, workshops and other activities in response to the OA 2020. The Sports Administrative hopes that the course will help the participants understand the future changes in international sports, facilitate the promotion of the OA 2020, and make Taiwan one of the first countries to echo the OA 2020 globally. With these goals in mind, it could help lay the foundation for future sports development in Taiwan and all international sports affairs and be prepared for more challenges.

While the government is committed to cultivate diverse abilities and promote sports knowledge among young athletes, the level of understanding of the OA 2020 of student athletes needs to be further explored. Therefore, the focus of the study is to understand how student athletes perceive the roadmap and the questionnaires were mainly conducted on college sportsmen who had at least participated in one sports event at a national level before. The study aims to understand the extent to which college athletes in Taiwan are aware of the OA 2020.

## II. Methodology

### 1. Compilation of research tools and research objects

This study was conducted through a questionnaire with reference to the one used by Chen, B. I., Chen, M. Y. and Yang, Y. J. (2020), which was prepared with reference to the OA 2020 announced by the Chinese Taipei Olympic Committee and was completed in 2018. In this study, the definition of student athletes refers to those athletes who are students in university, and the questionnaire was given to college athletes who had participated in at least one national sports event before. A total of 528 questionnaires were sent and 446 valid questionnaires were collected with a recovery rate of 84%.

### 2. Importance-Performance Analysis (IPA)

IPA is a technique that prioritizes the relevant attributes of a particular service or product for its importance and perceived performance to consumers (Sampson & Showalter, 1999). IPA has become a popular management tool since the late 1970s, and has often been used to identify the strengths and weaknesses of trademarks, products, services, tourism, retail, etc., and to suggest directions and suggestions for improvement (Cheron, McTavish & Perrien, 1989; Chapman, 1993; Chu & Choi, 2000; Kozak & Nield, 1998).

What the IPA quadrant positions represent:

**(1) Quadrant A (High Importance vs. High Performance):** The relevant attributes of the product are highly valued and the product's performance is considered outstanding. Products that fall under this quadrant should keep up the good work.

**(2) Quadrant B (High Importance vs. Low Performance):** The relevant attributes of the

products are considered important but the reviews of the actual performance indicate that it is urgent to improve the situation.

**(3) Quadrant C (Low Importance vs. Low Performance):** Products that attach low importance to the relevant attributes of the product and receive low performance reviews are the ones that should be put at a later priority to be improved later.

**(4) Quadrant D (Low Importance vs. High Performance):** The relevant attributes of the products are not paid attention to, but the actual performance of the product is quite satisfactory. For products in this quadrant, it represents that the consumers are happy with the performance and there is no need to make changes.

This study applies IPA to analyze the cognitive expectations and actual satisfaction of the Taiwanese student athletes on the topics of OA 2020.

### III. Data processing and analysis

According to the objectives and research questions of this research, the study will process the collected data and analyze them with IBM® SPSS® 23.0 for Windows statistical suite software. Next, descriptive analysis would be applied to indicate the basic information of the Taiwanese student athletes. The correlation between the importance of the OA 2020 and the satisfaction level of the student athletes about the roadmap will be analyzed by using the pair sample t-test and the Pearson correlation analysis. Finally, the IPA method is used to explore recommendations that need to be improved and maintained. The statistical significance level of each study was set as  $\alpha=.05$ .

### 1. Basic information of the Taiwanese student athletes

The majority of the college athletes were male, 267 people (59.8%), and 179 (40.2%) were female. The average age is about 20.58 years old, the youngest is 18 years old with 29 being the oldest, and the standard deviation is 1.91 years. For most of the students, the highest level of competition they had participated in was the national intercollegiate athletic games, with 218 participants (48.8%), followed by 63 people (14.1%) who had competed in any national competitions; The third is the National Junior College Ball League with 62 players (13.8%), the fourth is the World Level tournament with 50 players (11.3%), and the fifth was the Asian tier with 25 participants (5.5%). Regarding the career planning course held by the Chinese Taipei Olympic Committee, the majority of participants (76.4%) did not join the conference while 105 people (23.6%) had participated.

### 2. The importance of the OA 2020 perceived by the student athletes

As shown in Table 1, in terms of the current situation of sustainable development illustrated in the OA 2020, it is generally agreed that the topics were emphasized, with an average of 4.33 and a standard deviation of 0.18. The hot topics that student athletes believed to be the most important are “including sustainability in all aspects of the Olympic Games (4.49)”, “setting a framework for the Olympic programme (4.48)” and “maximising synergies with Olympic Movement stakeholders (4.47)”. In terms of the current situation in credibility, generally, it is considered to be emphasized with an average of 4.45 and standard deviation of 0.15. According to the college athletes,

“changing the philosophy to protecting clean athletes (4.67)”, “strengthening the 6th Fundamental Principle of Olympism (4.61)” and “ensuring compliance (4.61)” are the most essential aspects. As for how to attract more participation from the youth, it is accepted that the trend has been emphasized with an average of 4.44 and a standard deviation of 0.11. The topics with greater importance are considered to be “strengthening support to athletes (4.64)”, “blending sports and culture (4.5)” and “spreading Olympic values-based education (4.49)”.

### 3. The satisfaction level of the current situation in OA 2020 among the students

As Table 1, in the sphere of sustainability, the results showed that it is generally valued with an average of 4.15, and 0.14 standard deviations. The three recommendations that received the highest satisfaction level were “including sustainability in all aspects of the Olympic Games (4.26)”, “including sustainability within the Olympic Movement’s daily operations (4.26)” and “fostering TOP sponsors’ engagement with NOCs (4.26)”. In the sphere of credibility, the average is 4.23 and the standard deviation is 0.12. The recommendations receiving the highest satisfaction level were “protecting athletes who play honestly (4.39)”, “supporting autonomy (4.37)” and “ensuring compliance (4.37)”. Regarding how the sphere of youth in the OA 2020 is carried out, the outcome proved that it is satisfactory with an average of 4.23 and a standard deviation of 0.1. The top three items with the highest satisfaction level were “strengthening support to athletes (4.38)”, “spreading Olympic values-based education (4.3)”, “community engagement (4.28)” and

“blending sports and culture (4.28)”.

### 4. Differentiated assessment of Taiwanese student-athletes’ attention and satisfaction with OA 2020

In this section, the paired sample t-test is used to understand if there is a gap between the focus the Taiwanese student athletes put emphasis on and the satisfaction level of the three trends proposed in OA 2020, which are sustainable development, credibility and attracting the youth. The following are the results:

#### (1) Sustainable development

Based on the paired sample t-test, it was found that the importance level of the 13 recommendations in sustainable development in the OA 2020 does not match with the satisfaction level with an average of -.18. Among the recommendations, “forging relationships with professional leagues (-.29)”, “setting a framework for the Olympic programme (-.27)”, “integrating sustainable development into Olympic Movement (-.23)”, and “maximising synergies with Olympic Movement stakeholders” are the ones showing the greatest mean difference (Table 1).

#### (2) Credibility

According to the paired sample t-test, it was found that the importance and satisfaction levels of the 19 recommendations in the OA 2020 perceived by the Taiwanese student athletes are only extended in question 37, and the age limit for IOC members is not extended. Significant differences, all others showed significant differences, and the average mean difference between satisfaction and importance of this aspect was -.22, the top three questions with the mean difference

are 29. Increase financial transparency (-. 37) Recommendation 14 reinforces the basic principle of non-discrimination of any kind referred to in Olympism (-. 31) and Recommendation 15 to protect athletes who play honestly (-. 28), as shown in Table 2.

### *(3) Youth strategy*

Based on the paired sample t-test, it was found that there were significant differences in what the college athletes valued and their satisfaction level of the 8 recommendations regarding youth strategy in the OA 2020 with the average difference standing at -. 21. As shown in Table 3, the following recommendations have the biggest mean difference: “reviewing Youth Olympic Games positioning (-. 28)”, “launching an Olympic Channel (-. 27)” and “strengthening support to athletes (-. 26)”.

## **5. Analysis of the importance and satisfaction level of the three pillars**

The Pearson correlation analysis explored the correlation between the importance and satisfaction levels of the three trends of “sustainable development”, “credibility” and “attracting the youth” of the OA 2020. Among the three pillars, the importance of sustainable development was highly correlated with the satisfaction level of sustainable development, followed by that of credibility and the satisfaction level of public trust. Lastly, the importance of attracting the youth and the satisfaction level of the youth strategies was the lowest showing no significant relation between other variables.

## **6. The gap in the perception of the Taiwanese student athletes regarding the importance and satisfaction level of the recommendations in the OA 2020**

This section uses IPA to explore the awareness of Taiwanese students athletes on the recommendations in the OA 2020 regarding “sustainable development”, “credibility” and “attracting the youth”. The horizontal axis (X-axis) represents the level of satisfaction with the more right indicating higher satisfaction and the more left meaning the lower satisfaction while the vertical axis (Y-axis) shows the level of importance with the higher being more important and the lower being less important. The dominance retention zone (A quadrant) falls in the upper right corner, which indicates high importance and satisfaction level; in the upper left corner is the concentrated improvement area (B quadrant), which represents high importance and low satisfaction; in the lower left corner is the low priority improvement area (C quadrant), which suggests low importance and low satisfaction; in the lower right corner is the area of possible excessive emphasis (D quadrant), which stands for low importance and high satisfaction.

### *(1) Sustainable development*

Based on IPA, it seems that the 13 recommendations from the sustainability dimension are distributed in two quadrants, namely the advantage retention zone (Quadrant A) and the low priority improvement zone (Quadrant C).

Overall, 10 recommendations are located in the advantage retention zone (Quadrant A), including Recommendation 5 Including sustainability within the Olympic Movement’s daily operations. Recommendation

7 Strengthening relationships with organizations managing sport for people with different abilities, Recommendation 4 Including sustainability in all aspects of the Olympic Games, Recommendation 35 Fostering TOP sponsors' engagement with NOCs, Recommendation 2 Evaluating bid cities by assessing key opportunities and risks, Recommendation 6 Cooperating closely with other sports event organizers, Recommendation 8 Forging relationships with professional leagues, Recommendation 9 Setting a framework for the Olympic programme, Recommendation 33 Further involving sponsors in "Olympism in Action" programmes and Recommendation 34 Developing a global licensing programme. As for the remaining recommendations, they fall under the Low Priority Improvement Zone (Quadrant C), including Recommendation 10 Moving from a sport-based to an event-based programme, Recommendation 1 Shaping the bidding process as an invitation, Recommendation 3 Reducing the cost of bidding as shown in Figure 1.

### *(2) Credibility*

The importance-performance analysis method shows that the 19 recommendations in credibility also fall in the two quadrants, namely the advantage retention zone (Quadrant A) and the low priority improvement zone (Quadrant C) as shown in Figure 2.

Overall, 16 questions are located in the advantage preservation zone (Quadrant A), including Recommendation 15 Changing the philosophy to protecting clean athletes, Recommendation 28 Supporting autonomy, Recommendation 31 Ensuring compliance, Recommendation 27 Complying with basic principles of good governance,

Recommendation 32 Strengthening ethics, Recommendation 11 Fostering gender equality, Recommendation 17 Honoring clean athletes, Recommendation 14 Strengthening the 6th Fundamental Principle of Olympism, Recommendation 16 Leveraging the IOC USD 20 million fund to protect clean athletes, Recommendation 21 Strengthening IOC advocacy capacity, Recommendation 13 Maximizing synergies with Olympic Movement stakeholders, Recommendation 29 Increasing transparency, Recommendation 30 Strengthening the IOC Ethics Commission independence, Recommendation 40 Reviewing scope and composition of IOC commissions, Recommendation 20 Entering into strategic partnerships, and Recommendation 39 Fostering dialogue with society and within the Olympic Movement. Meanwhile, three recommendations are located in the Low Priority Improvement Zone (Quadrant C), namely Recommendation 38 Implementing a targeted recruitment process, Recommendation 12 Reducing the cost and reinforce the flexibility of Olympic Games management, and Recommendation 37 Addressing IOC membership age limit.

### *(3) Attracting youth*

Based on the results analyzed through the IPA method, 8 recommendations related to the youth strategies in OA 2020 could be found in the following quadrants: the advantage retention zone (Quadrant A), the low priority improvement zone (Quadrant C) and the area of possible excessive emphasis (Quadrant D).

Overall, 3 questions are located in the advantage retention zone (Quadrant A), including Recommendation 18 Strengthening support to athletes, Recommendation 22 Spreading Olympic values-based education,

and Recommendation 26 Further blending sport and culture. On the other hand, 4 recommendations fall under the low priority improvement zone (Quadrant C), including the Recommendation 24 Evaluating the Sport for Hope programme, Recommendation 25 Reviewing Youth Olympic Games positioning, Recommendation 19 Launching an Olympic Channel and Recommendation 36 Extending access to the Olympic brand for non-commercial use. Lastly, Recommendation 23 Engaging with communities is found in the area of possible over-emphasis (Quadrant D) as shown in Figure 3.

#### IV. Discussion

##### 1. Current situation of how the Taiwanese student athletes perceive the OA 2020

This study realized that the Taiwanese student athletes attach great importance to the three pillars of the OA 2020, which are sustainable development, credibility and attracting the youth, (M=4.33; 4.45: 4.44). The results corresponded with that of Chen, B. I., Chen, M. Y. and Yang, Y. J. (2020) (M=3.77; 4.22: 4.24), showing that despite the fact that 5 years had passed, student athletes still consider it crucial. In fact, it is found that the importance is growing. Hence, related authorities should take the recommendations valued by the student athletes seriously. From 2018 to 2021, the average difference in how college athletes value the importance of sustainable development is as high as -0.56, and it is inferred that the awareness of the aspect of sustainable development has risen in recent years. Therefore, the Taiwanese student athletes regard sustainability as an important topic in sports. In terms of credibility, protecting clean athletes is considered the most

vital recommendation in both 2018 (4.49) and 2021 (4.67). According to the result, it is apparent that athletes expect policies related to the promotion of honest competitions and drug-free sports fairness to be improved. In the aspect of attracting the youth in sports, the most important recommendation in 2018 (4.54) and 2021 remain the same, which is to strengthen support to athletes (4.64). This result illustrates that it is widely acknowledged that athletes are the core of sports or the Olympic Games, and that the government, sports-related organizations and schools must continue to support athletes and be the strongest support behind them

##### 2. Current status of the satisfaction level of the OA 2020 perceived by college athletes

In this study, it showed that Taiwanese student athletes reported a relatively high satisfaction level in the three aspects of the OA 2020 (M=4.15; 4.23: 4.23), differing from the results collected in 2018 by Chen, B. I., Chen, M. Y. and Yang, Y. J. (2020), which presented a lower satisfaction level in the three aspects (M=3.42; 3.76: 3.77). The change indicates that there's an improvement in the execution of the OA 2020. Thus, it implies that the student athletes acknowledged the progress in sports policies related to the three pillars. In the aspect of the sustainable development, students are most satisfied with 3 recommendations, which are "including sustainability in all aspects of the Olympic Games (1) ( 4.26)", "including sustainability within the Olympic Movement's daily operations (4.26)" and "fostering TOP sponsors' engagement with NOCs ( 4.26)." As for that aspect of credibility, the top 3 recommendations are "changing the philosophy to protecting clean



athletes (4.39)”, “support autonomy(4.37)” and “ensuring compliance. “ (4.37) Finally, the recommendations receiving the highest ranking are “strengthening support to athletes (4.38)”, “spreading Olympic values-based education (4.3)”, and “engaging with communities (4.28)”.

### 3. Verification of the difference in the importance and satisfaction of the Taiwanese student athletes with the OA 2020

The study realized that almost all the 40 recommendations except for Recommendation 37 “Address IOC membership age limit” have a higher rank in importance level than that of satisfaction level and the difference was obvious. The result of this study aligned with the one conducted in 2018 by Chen, B. I., Chen, M. Y. and Yang, Y. J. (2020). The difference is that compared with the year 2018, college athletes generally agreed that the importance of the recommendations is higher and are more satisfied with the OA 2020. The study also found that Recommendation 29 “increase transparency” demonstrated the largest difference between the level of importance and satisfaction, which is consistent with the outcome in 2018 analyzed by Chen, B. I., Chen, M. Y. and Yang, Y. J. (2020). The consistency indicates that even after 5 years, it is still of great importance to improve transparency in the IOC. Other recommendations that the Taiwanese student athletes deemed crucial are “strengthening the 6th Fundamental Principle of Olympism” and “changing the philosophy to protecting clean athletes”.

### 4. Distribution of evaluation result from the Taiwanese student athletes regarding satisfaction over the recommendations

This study found that student athletes generally recognized that the recommendations of OA 2020 are important while they did not feel that they are fully carried out, indicating that there is still room for improvement in relevant policies. Based on the results analyzed through IPA, none of the 40 recommendations in the three major directions fell in the concentrated improvement area (B quadrant). Meanwhile, 29 recommendations were found in the advantage retention area (A quadrant), which is different from the results gathered by Chen, B. I., Chen, M. Y. and Yang, Y. J. (2020) in 2018. At that time, a total of 6 recommendations were in the concentrated improvement area (Quadrant B), including Recommendation 10 “moving from a sport-based to an event-based programme”, Recommendation 29 “increasing transparency”, Recommendation 30 “strengthening the IOC Ethics Commission independence”, Recommendation 40 “reviewing scope and composition of IOC commissions”, Recommendation 20 “entering into strategic partnerships” and Recommendation 39 “fostering dialogue with society and within the Olympic Movement”. Plus, Recommendation 10 “move from a sport-based to an event-based programme” has moved to the low priority improvement zone (C symbol), and other 5 recommendations have moved to the advantage retention zone (A quadrant). In a nutshell, the IPA result reveals that improvements have been made from the outcomes generated in 2021 and 2018, and that it approves that the government and relevant authorities have successfully made some changes.

## V. Results and Discussion

According to the paired sample t-test, it was found that sustainable development, credibility and attracting young people The importance and satisfaction of the three major aspects showed significant differences; Pearson's analysis found that "credibility", "sustainable development" and "The importance and satisfaction of "attracting young people" are positively correlated with each other, and none of the three aspects is significantly correlated with each other; The Importance-Performance Degree Analysis showed that none of the 40 questions in the three major directions fell in the concentrated improvement area (B quadrant), 29 topics fell in the advantage retention area (A quadrant), 10 topics fell in the low priority improvement area (C quadrant), and 1 suggestion fell in the possible over-emphasis area (D quadrant).

This study found student-athletes attach great importance to the sustainable development, credibility and attraction of young people in the three major aspects of OA 2020 issues, which is the same as Chen, B I. , Chen, M. Y. and Yang, Y. J. Similar findings from 2018 (2020) show that even after more than five years, student-athletes still consider issues that are important to student-athletes, and that government departments and sports-related organizations should still consider issues that are important to student-athletes.

Student-athletes showed a satisfactory trend in the three aspects of sustainable development, credibility and attracting young people on the reform issues of OA 2020 (M=4.15; 4.23: 4.23), which differs from those conducted by Chen, B. I., Chen, M. Y. and Yang, Y. J. (2020), which presented unsatisfactory aspects

(M=3.42; 3.76: 3.77), indicating that the OA 2020 agenda is developing in a positive direction.

They also paid more attention to the OA 2020 than they were satisfied with, and the highest average difference was the 29th Increase transparency (-.37), and they are consistent, indicating that student-athletes still have higher expectations for organizational financial transparency. In the analysis of the degree of importance-performance, none of the 40 questions in the three major directions fell in the concentrated improvement area (B quadrant), and 29 topics fell in the advantage retention area (A quadrant), which was similar to Chen, B. I., Chen, M. Y. and Yang, Y. J. (2020) conducted in 2018 differed, and in 2018, many reform issues still fell in the improvement focus area (B quadrant). In general, the results tested in 2021 and 2018 have a trend of improvement, which means that the performance of the Taiwan government and relevant units is obvious to all.

## VI. Recommendations for future research

The OA 2020+5 has been proposed as many challenges lie ahead in the post-pandemic era and that the practical implementation of the recommendations regarding sustainable development, virtual sports and technology should continue to be advanced. It is noteworthy that athletes are still the core of sports and the Olympics, and it is necessary to continue to listen and support them. In terms of future research recommendations, topics related to the OA 2020+5 and the challenges posed by COVID-19 can be further explored.

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**Table 1**  
The importance and satisfaction levels of the sustainable development of the OA 2020 perceived by the Taiwanese student athletes analyzed by the paired sample t-test (n=446).

Structural surface	Importance (I)		Satisfaction (P)		Importance and satisfaction Average difference (P-I)	
	average value	standard deviation	average value	standard deviation	mean difference	t-value
Overall	4.33	.18	4.15	.14	-.18	11.15***
1. Shape the bidding process as an invitation	4	.91	3.89	.92	-.11	3.03**
2. Evaluate bid cities by assessing key opportunities and risks	4.37	.8	4.15	.95	-.22	5.61***
3. Reduce the cost of bidding	3.96	1.04	3.84	1.03	-.12	2.93**
4. Include sustainability in all aspects of the Olympic Games	4.45	.79	4.26	.91	-.19	4.69***
5. Include sustainability within the Olympic Movement's daily operations	4.49	.75	4.26	.91	-.23	5.78***
6. Cooperate closely with other sports event organisers	4.37	.77	4.24	.83	-.13	3.98***
7. Strengthen relationships with organisations managing sport for people with different abilities	4.47	.73	4.24	.87	-.23	5.47***
8. Forge relationships with professional leagues	4.42	.76	4.13	.92	-.29	7.08***
9. Set a framework for the Olympic programme	4.48	.71	4.21	.89	-.27	6.31***
10. Move from a sport-based to an event-based programme	4.17	.91	4.03	.9	-.14	3.81***
11. Further involve sponsors in "Olympism in Action" programmes	4.3	.86	4.16	.91	-.14	3.79***
12. Develop an authorized certification program globally	4.38	.79	4.25	.87	-.13	3.72***
13. Foster TOP sponsors' engagement with NOCs	4.45	.73	4.26	.87	-.19	5.23***

Note: \* for P<.05, \*\* for P<.01, and \*\*\*\* for P<.001

**Table 2**  
Credibility-related recommendations and the satisfaction level perceived by the Taiwanese student athletes analyzed through the paired sample t-test (n=446).

Structural surface	Importance (I)		Satisfaction (P)		Importance and satisfaction Average difference (P-I)	
	average value	standard deviation	average value	standard deviation	mean difference	t value
Overall	4.45	.15	4.23	.12	-.22	15.61***
11. Foster gender equality	4.56	.73	4.31	.9	-.25	5.63***
12. Reduce the cost and reinforce the flexibility of Olympic Games management	4.29	.85	4.03	.92	-0.26	6.41***
13. Maximise synergies with Olympic Movement stakeholders	4.4	.74	4.21	.88	-0.19	4.84***
14. Strengthen the 6th Fundamental Principle of Olympism	4.61	.65	4.3	.85	-0.31	7.68***
15. Change the philosophy to protecting clean athletes	4.67	.65	4.39	.89	-0.28	6.69***
16. Leverage the IOC USD 20 million fund to protect clean athletes	4.42	.83	4.23	.92	-0.19	4.58***
17. Honour clean athletes	4.48	.82	4.31	.91	-0.17	4.38***
20. Enter into strategic partnerships	4.36	.83	4.17	.92	-0.19	5.19***
21. Strengthen IOC advocacy capacity	4.46	.78	4.26	.88	-0.2	4.58***
27. Comply with basic principles of good governance	4.54	.77	4.35	.83	-0.19	4.86***
28. Support autonomy	4.58	.67	4.37	.81	-0.21	5.24***
29. Increase transparency	4.54	.71	4.17	1	-0.37	6.99***
30. Strengthen the IOC Ethics Commission independence	4.45	.74	4.18	.96	-0.27	5.73***
31. Ensure compliance	4.61	.64	4.37	.81	-0.24	6.42***
32. Strengthen ethics	4.58	.68	4.33	.82	-0.25	6.24***
37. Address IOC membership age limit	4.02	1	3.95	1.02	-0.07	1.85
38. Implement a targeted recruitment process	4.28	.82	4.07	.96	-0.21	5.08***
39. Foster dialogue with society and within the Olympic Movement	4.4	.78	4.19	.89	-0.21	4.97***
40. Review scope and composition of IOC commissions	4.38	.75	4.21	.88	-0.17	4.37***

Note: \* for P<.05, \*\* for P<.01, and \*\*\*\* for P<.001

**Table 3**

*What the Taiwanese student athletes value in the sphere of youth strategy in the OA 2020 and their satisfaction of the recommendations analyzed through the paired sample t-test (n=446).*

Structural surface	Importance (I)		Satisfaction (P)		Importance and satisfaction Average difference (P-I)		
	average value	standard deviation	average value	standard deviation	mean difference	t value	
Overall	4.44	.11	4.23	.1	-.21	9.92***	
18. Strengthen support to athletes	4.64	.65	4.38	.85	-.26	6.36***	
19. Launch an Olympic Channel	4.41	.85	4.14	.94	-.27	5.97***	
Youth strategy	22. Spread Olympic values-based education	4.49	.73	4.3	.82	-.19	4.66***
	23. Engage with communities	4.45	.74	4.28	.8	-.17	4.67***
	24. Evaluate the Sport for Hope programme	4.34	.8	4.2	.88	-.14	3.68***
	25. Review Youth Olympic Games positioning	4.41	.72	4.13	.91	-.28	6.88***
	26. Integrate sport with culture	4.5	.71	4.28	.87	-.22	5.78***
	36. Expand the non-commercial use of Olympic symbols	4.26	.85	4.12	.94	-.14	3.27***

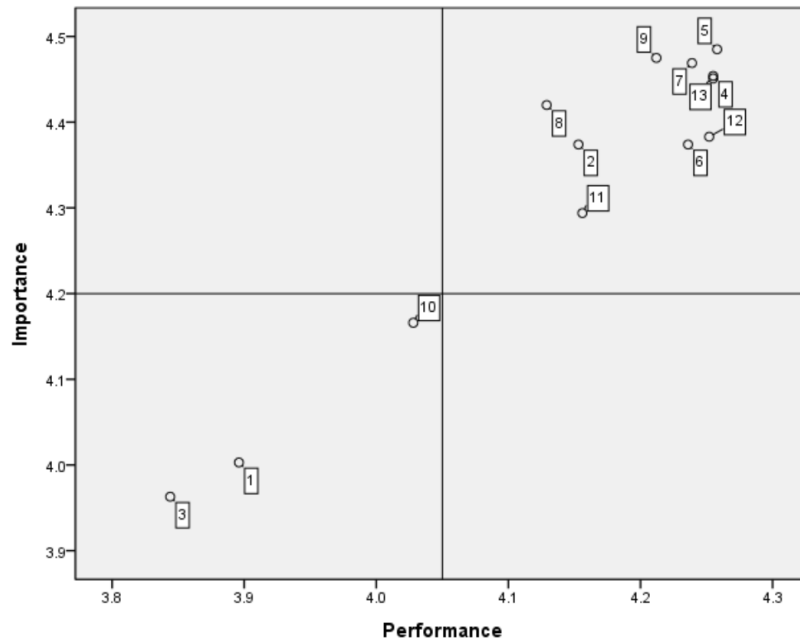
Note: \* for  $P < .05$ , \*\* for  $P < .01$ , and \*\*\*\* for  $P < .001$

**Table 4**

*Analysis of the importance and satisfaction level of the three pillars (n=446).*

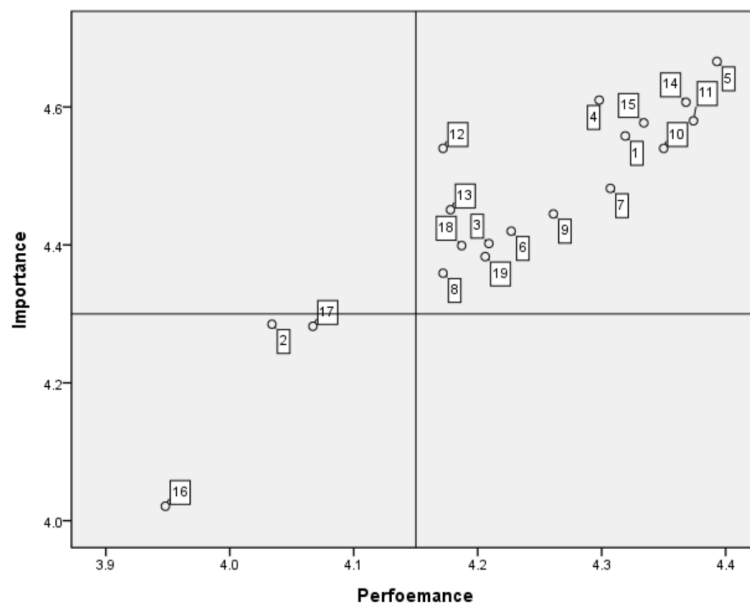
Variables	M	SD	1	2	3	4	5
1. The importance of sustainable development	4.33	.18	-				
2. The importance of credibility	4.45	.15	.03	-			
3. The importance of attracting the youth	4.43	.11	-.64	.22	-		
4. Satisfaction with sustainable development	4.15	.14	.96***	.16	-.52	-	
5. Satisfaction with credibility	4.23	.12	-.1	.92***	.25	-.04	-
6. Satisfaction with young strategies	4.23	.1	-.62	.5	.85**	-.555	.53

Note: \* means  $P < .05$ , \*\* means  $P < .01$ , \*\*\*\* means  $P < .001$



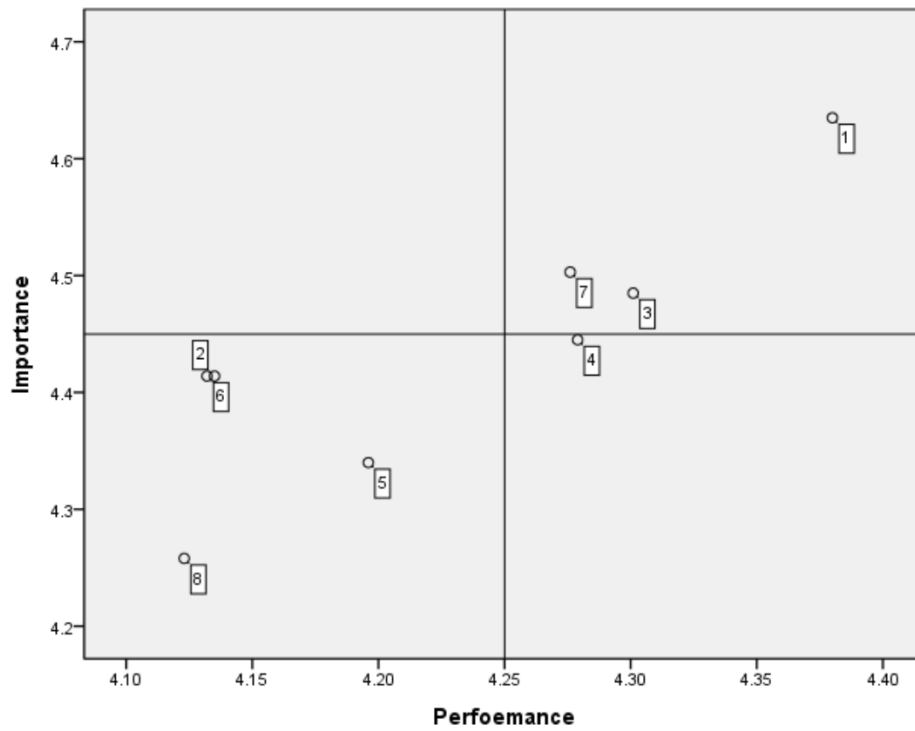
**Figure 1.** IPA analysis chart of the importance and satisfaction of Taiwanese student-athletes with the sustainable development of OA 2020.

Note: 1. Shape the bidding process as an invitation 2. Evaluate bid cities by assessing key opportunities and risks 3. Reduce the cost of bidding 4. Include sustainability in all aspects of the Olympic Games 5. Include sustainability within the Olympic Movement’s daily operations 6. Cooperate closely with other sports event organizers 7. Strengthen relationships with organizations managing sport for people with different abilities 8. Forge relationships with professional leagues 9. Set a framework for the Olympic programme 10. Move from a sport-based to an event-based programme 11. Further involve sponsors in “Olympism in Action” programmes 12. Develop a global licensing programme 13. Foster TOP sponsors’ engagement with NOCs



**Figure 2.** IPA analysis of the recommendations in credibility in the OA 2020

Note: 1. Foster gender equality. 2. Reduce the cost and reinforce the flexibility of Olympic Games management 3. Maximize synergies with Olympic Movement stakeholders 4. Strengthen the 6th Fundamental Principle of Olympism 5. Change the philosophy to protecting clean athletes 6. Leverage the IOC USD 20 million fund to protect clean athletes 7. Honor clean athletes 8. Enter into strategic partnerships 9. Strengthen IOC advocacy capacity 10. Comply with basic principles of good governance 11. Support autonomy 12. Increase transparency. 13. Strengthen the IOC Ethics Commission independence 14. Ensure compliance 15. Strengthen ethics 16. Address IOC membership age limit 17. Implement a targeted recruitment process 18. Foster dialogue with society and within the Olympic Movement 19. Review scope and composition of IOC commissions



**Figure 3** IPA analysis of recommendation related to youth strategies in the OA 2020

Note: 1. Strengthen support to athletes 2. Launch an Olympic Channel. 3. Spread Olympic values-based education 4. Engage with communities 5. Evaluate the Sport for Hope programme 6. Review Youth Olympic Games positioning, 7. Further blend sport and culture 8. Extend access to the Olympic brand for non-commercial use