Analysis of User Needs of Sports and Fitness Apps from the Perspective of "Healthy China"

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ABSTRACT. *With the continuous improvement of national health awareness, online fitness services have emerged. At the end of 2019, a sudden "new coronavirus pneumonia epidemic" brought online fitness methods to new heights. However, in this raging development situation, the development model of sports and fitness APP is not yet fully mature, and there are still various problems. This article conducts social research on this issue and uses models to analyze. The results of this article have certain reference value for the future development plan of sports fitness APP.*

KEYWORDS: *Healthy china, Sports and fitness app, Analytic hierarchy process, User needs*

1. Introduction

Introduction

With the continuous improvement of national health awareness, the accelerating pace of social life and the rapid development of the Internet, online fitness services have emerged. At the end of 2019, a sudden "new coronavirus pneumonia epidemic" pushed online fitness methods such as fitness live broadcasts and fitness apps to new heights. The scientific fitness videos mobilized by famous coaches and athletes by the State Sports General Administration have accumulated more than 2.6 billion views on the Internet platform. The social organization Le Ke Sports launched the public welfare topic of "Overcoming the difficulties together and doing exercise at home", and its short fitness videos have been played online for 2 billion times. Started online, Keep has combined multiple platforms and fitness professionals to launch the "Holiday Sports Live Collection" with a total of more than 50 million participants, and the peak number of online users reached 160,000. It can be said that people have exercised their bodies in this way during special periods, improved their long-term depressed mood at home, and played the unique function of online fitness. At the same time, as online fitness continues to be integrated into people's daily lives, it will provide consumers with more diverse options for receiving sports services, and will

also enrich the development of Chinese fitness industry to a certain extent.

However, under this raging development situation, the sports and fitness apps development model is not yet fully mature, and there are still various problems. This also makes sports and fitness APP a hot issue that is generally concerned by all sectors of society today. Therefore, it is very necessary to take effective measures to improve the development model of sports and fitness apps. In this regard, this article investigates the development status of sports and fitness apps and user satisfaction.

This survey takes users of sports and fitness APP as the survey object The online questionnaire was used to conduct the survey. Among them, 500 questionnaires were distributed, 430 valid questionnaires, and the questionnaire efficiency reached 86%. The survey adopts the analytic hierarchy process, combined with the macro-social background and micro-data analysis, starting from the development status of online sports apps, analyzes the advantages of sports and fitness apps and aspects to be improved, in order to promote the better development of sports and fitness apps.

2. User's Cognition and Demand Analysis of Sports and Fitness App

2.1 The Main Advantages of the Exercise and Fitness App from the Perspective of Users

When asked about the advantages of sports and fitness apps, 77.99% of users believe that the main advantages of online sports apps are that they require less time and are more convenient to use. At the same time, 68.90% of users believe that online exercise costs are low and can save money on fitness. 57.42% of the respondents believe that the main advantage of online sports APP is that it can formulate scientific, reasonable and personalized training plans. 33.01% of the respondents believe that it provides users with an online communication and share platform.
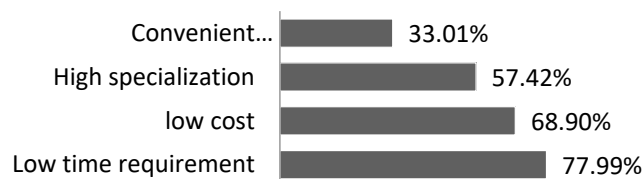

Fig.1 : the Main Advantages of Online Sports Apps in the Minds of Users

2.2 The Disadvantages of Traditional Gyms from the Perspective of Users

When surveying users' views on traditional gyms, it is found that 79.43% of users believe that the disadvantage of offline gyms is that they require a lot of free time. 74.16% of users believe that high prices are the shortcomings of traditional gyms.

50.24% of users think that the gym is far from home and inconvenient. In addition, 32.06% of users think that there are too many people in the gym, and the training equipment is not enough during peak times, and the training effect is not good. It can be seen that the main disadvantages of gyms are the need for a lot of free time, high cost, and long distance. This is basically in line with the conclusions obtained from the main advantages of the above online sports APP.
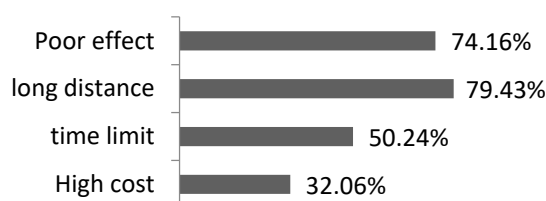

Fig.2 : the Disadvantages of Traditional Gyms from the Perspective of Users

2.3 Existing Problems of Online Sports Apps

In a survey of what problems the users encountered in using online sports apps, 59.29% of the respondents thought it was difficult to persist. 41.43% of respondents think that the difficulty of the course cannot be accepted (too difficult or too easy). 31.21% of the respondents think that the types of courses are few and they cannot find the courses they need. There are also 26.58% of the respondents believe that the exercise data is inaccurate. In addition, 16.43% of users think the operation is too complicated. Therefore, we can judge the richness and diversity of courses that users are most concerned about when using the software. Many people give up using software because they can't find a suitable course for them.
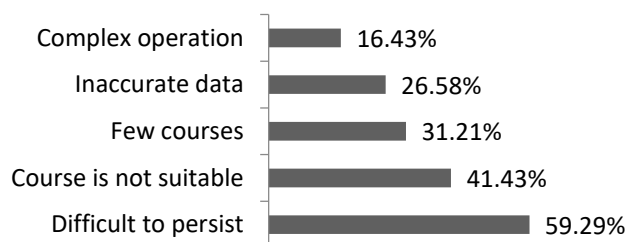

Fig.3 : Existing Problems of Online Sports Apps

3. Analysis of Factors Affecting User Experience

3.1 Construction of Evaluation System

This article decomposes the decision-making problem into three levels. The top level is the target level O, which is a comprehensive evaluation of the fitness APP experience. The bottom layer is the program layer P, which includes experience sharing (P1), article push (P2), course types (P3), training plan (P4), exercise data visualization (P5), health data visualization (P6), diet matching (P7), course price (P8), ancillary product price (P9). The middle layer is the standard layer, which is the classification of the program layer, including four indicators of social attributes (C1), course teaching (C2), professional analysis (C3), and product prices (C4).

3.2 The Construction of Comparison Judgment Matrix

This article establishes the judgment matrix through expert scoring method. That is, let experts compare and judge each influencing factor in pairs, and score from one to nine according to the importance of each two factors, so as to measure the weight of each indicator(where 1 means that two factors are equally important, and 9 means that one factor is very important to the other. The larger the number, the greater the importance of one factor relative to another). After comprehensive opinions, each comparison judgment matrix can be obtained: 0-C, C1-P, C2-P, C3-P, C4-P.

Table 1 : Judgment Matrix o-C

0	C1	C2	C3	C4
C1	1	0.5	0.3333	2
C2	2	1	0.5	3
C3	3	2	1	5
C4	0.5	0.3333	0.2	1
$\lambda_{max}=4$,CR= 0.0054 <0.1,pass the consistency check				

Table 2 : Judgment Matrix C1-P

C1	P1	P2
P1	1	2
P2	0.5	1
$\lambda max=2$,CR= 0 <0.1, pass the consistency check		

Table 3 : Judgment Matrix C2-P

C2	P3	P4
P3	1	1
P4	1	1
λmax=2,CR= 0 <0.1, pass the consistency check		

Table 4 : Judgment Matrix C3-P

C3	P5	P6	P7
P5	1	2	4
P6	0.5	1	3
P7	0.25	0.3333	1
λmax=3,CR= 0.0176 <0.1, pass the consistency check			

Table 5 : Judgment Matrix C4-P

C4	P8	P9
P8	1	3
P9	0.3333	1
λmax=2,CR= 0 <0.1, pass the consistency check		

3.3 Hierarchical Ranking and Consistency Check

Consistency test is a necessary step of analytic hierarchy process. He is the standard for testing the rationality of the matrix. If the matrix fails the consistency test, then the weights obtained will be wrong, and there is no convincing power.

First, check the consistency of all the matrices to get the consistency index:

$$CI = \frac{\lambda_{max} - n}{n - 1} \qquad (1)$$

n is the order of the matrix, and λ_{max} is the maximum eigenvalue of the matrix. We then calculate the consistency ratio of the matrix by (2):

$$CR = \frac{CI}{RI} \qquad (2)$$

The value of RI is shown in the following table. When CR is less than 0.1, the matrix is considered reasonable and passes the test. When CR is greater than 0.1, the matrix is considered unreasonable and cannot pass the test.

Table 6 : Standard Values of Average Random Consistency Index Ri

n	1	2	3	4	5	6	7	8	9	10
RI	0.00	0.00	0.52	0.89	1.12	1.26	1.36	1.41	1.46	1.49

Using MATLAB to calculate the weight vector of each judgment matrix, and conduct a consistency test on them, the results show that the consistency ratios of the five matrices are all less than 0.1, passing the consistency test.

Use MATLAB to calculate the combined weight of the plan layer to the target layer, and sort them. The weights of the 9 indicators are: experience sharing (0.1047), article push (0.0523), course type (0.1360), training plan (0.1360), sports Data visualization (0.2696), health data visualization (0.1543), diet matching (0.0589), course price (0.0662), ancillary product price (0.0221).

Table 7 : the Weight of Each Indicator

Criterion layer		Scheme layer		Analytic hierarchy process weight
index	*weight*	*index*	*weight*	*weight*
Social attributes	*0.1570*	*Experience sharing*	*0.6667*	*0.1047*
		Article push	*0.3333*	*0.0523*
Course Teaching	*0.2720*	*Course type*	*0.5000*	*0.1360*
		Training plan	*0.5000*	*0.1360*
Professional analysis	*0.4829*	*Movement data visualization*	*0.5584*	*0.2696*
		Health data visible	*0.3196*	*0.1543*
		Diet match	*0.1220*	*0.0589*
product price	*0.0882*	*Course price*	*0.7500*	*0.0662*
		Matching product price	*0.2500*	*0.0221*

3.4 Result Analysis

As can be seen from the above table, professional analysis is the most important part of the user experience, and the weight accounts for close to 50%. Curriculum teaching is second, and the weight accounts for 27.2%. The type of curriculum and training plan have the same impact on user experience. Social attributes accounted for 15.7%. Product prices have the least impact on user experience, only 8.82%. It can be seen that when users use sports and fitness apps, they pay more attention to the professional analysis of the APP, especially the visualization of sports data and health data. As for the price of the product, users pay less attention. This may be due to the fact that most of the sports and fitness apps currently on the market provide free

courses. Compared with traditional gyms, the sports and fitness app spends very little.

4. Conclusion

With the increase in health awareness of the general public, the demand for sports and fitness apps will continue to increase. Especially during the new coronavirus pneumonia epidemic, people cannot go out, and more and more people choose to use sports fitness apps as their fitness method. Online fitness will become a new sports trend.

Compared with traditional gyms, fitness apps have their own unique advantages. The first is that it is more convenient to use and requires less time. For young people with high work pressure, they don't have much time or energy to go to the gym, but they have a great demand for exercise, and the sports and fitness apps just solves this contradiction. No need for various fitness equipment, just turn on the phone, you can exercise anytime, anywhere. Second, data visualization. The fitness app can display your exercise data and physical health on the screen, so as to provide you with a reasonable training plan and diet. This kind of professional analysis is unmatched by traditional gyms. Third, most fitness apps on the market currently have social functions. It provides a platform for you to communicate with fitness enthusiasts and share experiences. Incorporating social elements is one of its strengths

Although sports and fitness apps have many advantages that traditional gyms cannot match, it is still in the initial stage of development, and many functions are not perfect enough, and there is a lot of room for improvement. In view of these issues, this paper conducts investigations, uses models for analysis, and makes the following suggestions.

First, make reasonable use of the advantages to provide users with more visual data. The empirical analysis results show that the proportion of professional analysis in user experience is close to 0.5. This shows that users pay more attention to the visual data and professional analysis provided by the sports fitness APP when using the software, which can help users achieve better fitness effects. Online sports platforms can continue to expand their advantages and attract more people to join. Second, develop more supporting products and establish an ecosystem. For long-term development of sports and fitness apps, an ecosystem must be established. Through the development of supporting products to cater to the user's habits, thereby increasing user stickiness. Third, increase the number of courses and improve the curriculum system. As more and more people join, various needs will arise. In order to attract more users, the platform should increase the number and types of courses as soon as possible, so that every user has a choice.

5. Acknowledgments

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