



**INVESTIGATION ON THE USE OF FITNESS SUPPLEMENTS  
BY CONSUMERS IN GYM IN BINZHOU CITY: BASED ON THE  
MODIFIED THEORY OF PLANNED BEHAVIOR**


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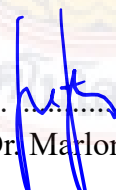
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**Faculty of Human Resource Development and Management International College, Rajamangala University of Technology Krungthep approved this independent study as partial fulfillment of the requirement for the degree of Arts in Human Resource Development and Management**

  
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## **ABSTRACT**

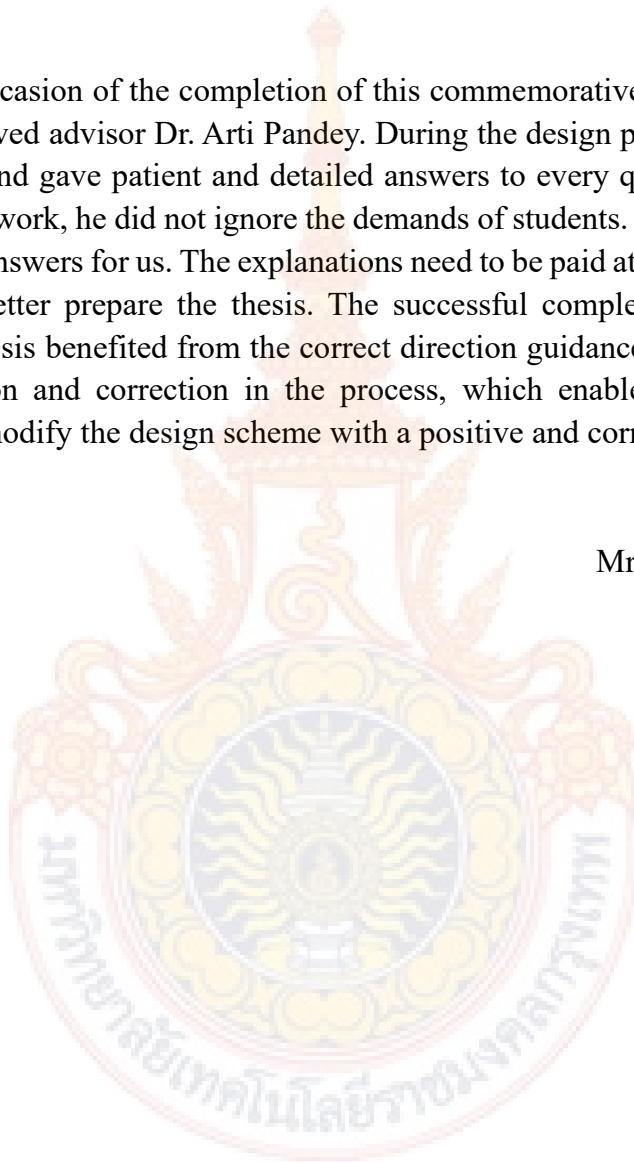
This study uses 10 commercial fitness clubs in Binzhou as a sample group to study the factors that influence consumers' attitudes and willingness to purchase fitness supplements. Past studies have revealed the reasons why consumers buy dietary supplements. However, in the gym environment, consumers buy and use fitness supplements for different reasons. This research reveals the motivations behind the consumption of fitness supplements, especially among consumers who exercise in the gym. This study uses a sample of 450 respondents from 10 gymnasiums in Binzhou City, China, and uses structural equation modeling for data analysis. This study found that health benefits are the most important factor affecting consumers' use of fitness supplements. Health awareness and social influence have positive influence on purchasing attitudes and intentions. At the same time, the research has also confirmed that attitude has a significant impact on purchase intention. The research provides a reference and an effective model for marketers to develop marketing strategies.

**Keywords:** gym supplements, perceived risk, perceived benefits, social influence, health consciousness.

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# CHAPTER 1

## INTRODUCTION

### 1.1 Overview

The most glorious year in China was 2008. At the Olympic Games(Malfas et al., 2004), China won 51 gold medals in one fell swoop, leaving other countries far behind. But looking back, compared with other countries, we can find our own problems with a large country with a population of more than 1.6 billion. In 1996, through a survey of the status quo of mass sports in my country, the sports population standard was defined as: weekly the number of exercises is not less than 3 times, the time of each exercise is not less than 30 minutes, and the load intensity is medium or above. The survey results show that the sports population accounts for 31.4% of my country's total. Compared with developed countries, this ratio is much lower. For example, the sports population of more developed countries such as Australia, Japan, New Zealand, and Finland has reached more than 70%(Pu et al., 2020). After years of hard work, China's sports population is on the rise. By the end of 2020, the national sports population will account for about 35% of the total population, but this proportion is still far below the level of the sports population in developed countries. So far, although our population has increased in real terms, the increase is still quite small. In recent years, due to the advancement of science and technology and rapid economic development in China, people's living standards have also been greatly improved. While pursuing material life, people also pay more attention to their own quality of life and physical condition(Cheng, 2020).



Figure 1.1 Chinese gym  
Source: Photographed by author

Therefore, "fitness" has gradually been integrated into people's lives and has become a pursuit of most fitness enthusiasts. As a new form of sports organization, fitness clubs exist in people's life. They are recognized and loved by fitness enthusiasts with high-quality and unique fitness services(Zhou & Kikuchi, 2009). They are important for promoting the sports industry, satisfying scientific fitness needs and maintaining healthy lifestyle habits. It is of great significance to improve the fitness market system(Jia, 2019).

On the other hand, as Chinese consumers have higher requirements for physical health, and in daily life, the situation of cooking at home has decreased, and more young people have chosen more time-saving food delivery, which has also led to the diet structure important changes have taken place, and nutritional supplements have naturally entered the consumer's field of vision(Boer et al., 2004). Studies have shown that the global supplement market has reached billions of dollars in size and is still growing rapidly. Due to the increasing interest of consumers in nutritional supplements, there are already a large number of nutritional supplements with different brands and functions on the market(M. Kim et al., 2018).



Figure 1.2 Fitness supplement  
Source: Photographed by author

Researchers have conducted a lot of research around the use of dietary supplements(Bailey et al., 2013), food nutrition(Margetts et al., 1997) and food choices(De Cosmi et al., 2017), food functionality(Abe & Misaka, 2018), organic foods and green foods(Arshad et al., 2020). Relevant studies ignore the needs of specific groups in specific environments, such as fitness enthusiasts. People who exercise in the gym have different needs for nutritional supplements than others. More fitness enthusiasts consider using nutritional supplements to improve them. Athletic performance(Saeedi et al., 2013). Compared with the use of dietary supplements by other consumers, this study created a separate fitness supplement category for fitness enthusiasts, making it the subject of the study.

## 1.2 The Statement of Problem

From Beijing alone, relevant data show that the scale of the sports industry is getting bigger and bigger, and the total scale has achieved an added value of about 50 billion yuan. Especially in the sports service industry, added value accounts for more than half of the sports industry. People who exercise will account for half of the sports industry's services by 2025 according to public data. Not only because of the demand, but also some policy support, many people who love sports devote themselves to the cause of sports, drive public fitness, and make many sports entrepreneurs firm their determination to move forward.

As people become more aware of fitness, they are going to gyms, which is driving the growth of the fitness supplement market. Not only in the United States and

Europe, but also in Asian countries, more fitness enthusiasts have begun to accept supplements(Jeongseon Kim et al., 2010). People who work out in the gym also start to use fitness supplements(Goston & Toulson Davisson Correia, 2010). Research shows that approximately 36.8% of Iranian gym participants use fitness supplements, of which the most commonly used are supplements rich in carbohydrates, multivitamins, multi-minerals and high-quality protein. Male fitness enthusiasts are more inclined to use fitness supplements that contain a lot of high-quality protein, amino acids and carbohydrates, while women mainly use supplements and meal replacement products that are rich in vitamins, minerals, and natural plant ingredients(Goston & Correia, 2010).

In past studies, researchers have discovered that there are many different reasons that motivate people to use nutritional supplements, such as beautiful appearance, healthy body, and nutritional supplements(Gizis & Shorter, 2004). Therefore, this research mainly focuses on evaluating the relationship between the factors affecting fitness enthusiasts' attitude towards fitness supplements and their willingness to purchase fitness supplements, so as to promote the evaluation of fitness supplements in Binzhou City, China. Understanding of the consumer market.

### **1.3 Research Questions and Significance of Object**

#### **1.3.1 Research questions**

This research aims to detect and better understand the influencing factors of fitness enthusiasts using fitness supplements. The overall purpose of this research is to investigate the factors influencing the use of fitness supplements by fitness enthusiasts and to guide marketers in developing targeted sales strategies.

RQ1. Does health consciousness have a significant impact on fitness enthusiasts' attitudes towards using fitness supplements?

RQ2. Does social influence have a significant impact on fitness enthusiasts' attitudes towards using fitness supplements?

RQ3. Does perceived health risk have a significant impact on the attitude of fitness enthusiasts to use fitness supplements?

RQ4. Does perceived health benefits have a significant impact on fitness enthusiasts' attitudes towards using fitness supplements?

RQ5. Does the attitude of fitness enthusiasts using fitness supplements have a significant impact on fitness supplement purchase intentions?

RQ6: Do perceived health risks have a significant impact on the purchase intention of fitness supplements?

### **1.3.2 Significance of the research**

Through this research, it can help marketers (1) understand which factors affect the attitudes of Chinese fitness enthusiasts in using fitness supplements (2) verify the connection between the above factors and consumers' purchase of fitness supplements (3) guide marketers on the basis. The research results formulate a sales strategy (4) and provide a model for marketers to investigate their willingness to buy fitness supplements.

## **1.4 Purpose of the Study**

Although past studies have shown that people use supplements for different reasons, such as health, nutrition and appearance, this study provides an explanation for choosing fitness supplements- more social and cognitive motivation may be the basis for choosing fitness supplements(Jeongseon Kim et al., 2010). Since fitness supplements are mainly consumed by professional bodybuilders, consumers who believe that fitness supplements provide specific fitness related benefits may evaluate them more positively(Goston & Toulson Davisson Correia, 2010).

This research is a quantitative research. The purpose of the research is:

1. To promote systematic understanding of fitness supplement consumption in the Chinese market.
2. To explain consumers' health awareness, social impact, relative risks and benefits of consuming fitness supplements, their attitudes towards fitness supplements and their purchase of fitness supplements.
3. To coach fitness supplement marketers.

This research will be conducted in 6 GYMs in Binzhou City, China, and data on fitness enthusiasts in the above 6 GYMs will be collected through a questionnaire survey.

## **1.5 Scope of Research**

This study uses a survey research method to collect data from 10 GYM fitness enthusiasts in Binzhou City, China through questionnaires. In this study, the target population is fitness enthusiasts who patronize Gyms. The lifestyle and eating habits of fitness enthusiasts constitute a key part of supplements. In this case, in order to fully understand the influencing factors of supplement use, fitness enthusiasts who patronize Gyms are very accurate target groups, and their demand for fitness supplements is relatively strong(Evans et al., 2012).

This study uses a survey research method to collect data from six GYM fitness enthusiasts in Binzhou City, China through questionnaires. In this study, the target population is a population of fitness enthusiasts who patronize Gyms. The lifestyle and eating habits of fitness enthusiasts constitute a key part of supplements. In this case, in order to fully understand the influencing factors of supplement use, fitness enthusiasts



who patronize Gyms are very accurate target groups, and their demand for fitness supplements is relatively strong. The questionnaire chooses a 5-point Likert scale, and arranges a screening question at the beginning of the questionnaire: "Do you go to the gym to work out?" Only those who get an affirmative answer will be asked to fill in the complete questionnaire. The data collection time is November 2020 and April 2021. During this period, 450 people participated in the survey. However, 15 were excluded because they did not answer the questions completely. After excluding the questionnaires that did not meet the requirements, the final convenience sample was composed of 435 respondents, including non-users and users of fitness supplements, and the overall response rate was 96.67%.

## **1.6 Benefits of Research**

First of all, this study can be said to be the first empirical study to explicitly examine the motivations that influence consumers' attitudes and behavioral intentions towards fitness supplements. While past research has been helpful in understanding why individuals consume different types of dietary supplements, this research reveals the motivation behind the consumption of fitness supplements, especially fitness supplements. The results will help researchers understand why health enthusiasts prefer fitness-related supplements, rather than traditional dietary supplements that cannot meet the nutritional needs of bodybuilders. Secondly, this research also provides management implications related to corporate managers and policy makers seeking to formulate marketing strategies and encourage supplement consumption. It informs marketing practitioners, health professionals, and public policy agencies about the key predictors of fitness supplement consumption. Marketers will have a good understanding of the driving factors of these supplement consumption behaviors, as this will enable them to plan and design effective product offerings and develop marketing strategies to encourage supplement consumption.

## **1.7 Future Research**

Furthermore, since fitness and sports supplements are high-priced commodities, it might be interesting to study the effect of consumers' value consciousness on their decision to purchase supplements. New studies could broaden the analysis of the entire model by verifying the actual purchase behavior rather than just the purchase intention. Another suggestion is the measurement of the constructs in other parts of China or it could be reapplied to other countries in order to identify possible cultural differences in the perception of risk and benefits related to use of gym supplements.

## **CHAPTER 2**

### **LITERATURE REVIEW**

#### **2.1 Definition**

##### **2.1.1 Gym**

In order to obtain revenue, operators take entertainment facilities as an activity mode and fitness clubs as business entities to provide fitness, entertainment and leisure services to the public. According to the characteristics of market operation, operators operate by themselves in an entrepreneurial way, assume sole responsibility for their own profits and losses, and implement the membership system. And Sports clubs serving the masses are commercial fitness clubs( Gizis & Shorter, 2004).

##### **2.1.2 Fitness club concept**

The term “fitness club” originated from the wealthy classes of ancient Greece and Rome. It appeared in the United States in the 1950s. It was called "General Assembly" in English and was a collective name for social groups and entertainment venues in Europe and the United States. Through collecting and searching in Cihai, Cihai defines clubs as groups and places for social communication, cultural entertainment and other activities(Barros & Goncalves, 2015). The main purpose of fitness exercise is to exercise and improve body quality. It is a physical activity that strengthens the body with equipment and aerobic exercise. In the exercise, barbell dumbbells and some combination equipment are mainly used to make the body muscles. More developed, the lines are prominent, and can improve the external shape of the human body(Zhou, 2019). Chinese scholars have done a lot of research on fitness clubs, and they have different views on the definition of the concept. Through a comprehensive summary of previous opinions, this article believes that: a fitness club refers to providing a fitness place for the majority of fitness enthusiasts, providing aerobic and weight-bearing fitness equipment, aerobics area, and fitness instructor for consumers. A comprehensive fitness place without physical exertion. However, nowadays, fitness clubs in more developed cities not only cover these contents, they also build gyms. A fitness place that combines entertainment and fitness with a wealth of fitness programs, including swimming, ball games (snooker, tennis, badminton, etc.), catering services, health and wellness, sauna, physiotherapy, surfing and so on(Mullen & Whaley, 2010).

### **2.1.3 Characteristics of fitness clubs**

As a new form of service, fitness club is different from other consumer services and has its own unique consumption characteristics: (1) The fitness consumption has no physical nature. What is the non-material? The non-material refers to the consumer in the fitness club. By paying a certain fitness fee, but not getting real consumer goods, unlike other forms of purchase, you can get the same items through currency exchange. The purchase service provided by fitness clubs is weightless and cannot be measured by scale. An intangible product that measures length. Whether it is a fitness coach or other staff in the club, what they provide is a kind of service attitude. The value obtained in the gym is continuously produced in the process of scientific exercise, which can improve the physical shape of the person, and develop the body and mind healthy, and experience the fun of fitness during exercise and enjoy the body and mind. (2) The long-term nature of fitness consumption, because fitness is a long-term process, and good results can not be seen in a short time. Exercise must be persisted, and step by step can ensure good results, and continue on the basis of good results. keep it up. Fitness exercise starts from the beginning stage-the adaptation stage-breaking the adaptation stage--the re-adaptation stage. This process is a continuous cycle. Therefore, if fitness consumers want to achieve good results and maintain them, they must persist in Club exercises, always choose to spend in the club. (3) The simultaneity of fitness production and consumption. In real life, the production and consumption processes of physical products are generally separated in time and space, but the processes of production and consumption in fitness clubs are carried out at the same time, in time and space(Wang & Wu, 2008). There is complete consistency on the above. In the process of fitness consumers exercising in the gym, the various services provided by the gym, the exercise classes given by the fitness consumers and the guidance of the fitness coaches are not only the production process of the gym providing services to the fitness consumers, but also the consumers receiving services in the gym. The consumption process of the two is simultaneous and consistent in time and space(Cheng, 2020).

### **2.1.4 Fitness supplements**

There are different definitions of supplements used in fitness. First of all, fitness supplements are divided into three categories, namely medical supplements, which are mainly used to prevent or treat nutritional deficiencies, such as preventing bone softening due to lack of vitamin E. The second type is performance supplements, which can directly or indirectly affect performance. The third type is sports food, which contains protein powder, carbohydrate supplements, etc. Its main function is to provide a lot of nutrients and energy(Mettler et al., 2020). Studis have shown that in addition to a basic healthy diet, there is a connection between men's pursuit of muscle and the use of fitness supplements. In order to obtain good muscle performance and appearance performance, more and more consumers are beginning to use drugs that improve



appearance and muscle performance. One commonly used supplement category is anabolic androgenic steroids (AAS). For example, thyroid hormones, analgesics, prohormones, fat burning supplements, nutritional supplements and other auxiliary drugs, these auxiliary drugs can help reduce the side effects of using specific fitness supplements(Kanayama et al., 2001)

### **2.1.5 Attitude**

Attitude is defined as a certain degree of positive or negative psychological state of products perceived by social or personal stimuli(Jiyoung Kim & Lennon, 2013).Ajzen (1991) believes that the attitude toward purchasing behavior refers to the personal evaluation that is beneficial or unfavorable to purchasing behavior. If a person has a positive attitude toward purchasing behavior, she or he is more likely to adopt purchasing behavior.

Attitude is defined as a personal view of an object, such as dislike or liking. Generally, people are more likely to reject behaviors they don't like, but accept behaviors they like(Armitage & Conner, 2010). Strictly speaking, attitude is not a very precise term. Attitudes are often used in discussions that do not require precision. Attitude refers to the degree to which a person feels unfavorable or advantageous to perform an action(Cheon et al., 2012). In the technology acceptance model, attitude refers to the evaluation of users' needs for using specific information system applications(Ajzen & Madden, 1986).

### **2.1.6 Intention to purchase**

Product purchase intention refers to a customer's willingness to purchase a certain service or a certain product. This willingness is the result of a combination of many different factors, such as product quality, service quality, user needs and price factors, and so on(Jiyoung Kim & Lennon, 2013).

### **2.1.7 Perceived health benefits**

Perceived Health Benefits refer to the ability to clearly perceive the clear benefits to physical health, which are usually reflected in different aspects, such as beneficial to certain functions of the body, beneficial to strengthening physique, beneficial to reducing pain or beneficial to aging, etc(Koivisto et al., 2019).

### **2.1.8 Perceived health risk**

Perceived health risks are those that affect the human body and affect human health among existing risks. Specifically speaking, health risks refer to natural causes in the course of human life. Many factors in the development of society and people themselves have led to the possibility of illness, disability and health loss. Health risks generally have personal injury, high frequency, complex causes, and social spread(Huang et al., 2020).

### **2.1.9 Social influence**

Social Influence reflects the social pressure or influence a person feels when performing a certain behavior. If other people around you think that a product is worth buying, then consumers themselves will have more willingness to buy(Cosaque et al., 2011) . Social influence refers to the influence and effect of other people's words, actions, or just their presence on the individual's thoughts, feelings, attitudes or actions. There are many forms, not only to change the intention of other people's behavior, but also the existence of others can affect individuals(Boer et al., 2004).

### **2.1.10 Health consciousness**

Health Consciousness is defined as the degree to which health issues are integrated into one's daily activities, that is, the degree to which a person stays healthy(Dutta-Bergman, 2004). Health Consciousness refers to people's beliefs and concepts about health, that is, people's attitudes towards health values and their confidence in health. The correct health awareness believes that health is the first wealth of people and the guarantee of career and happiness. It is not only the basis of people's activities, but also one of the ultimate goals of people's activities.(Pu et al., 2020).

### **2.1.11 Performance enhancing substance**

Performance enhancing substance refers to any substance taken in a non-drug dose, which is specifically used to improve athletic performance and physical condition. If a substance is beneficial to sports performance or physical vitality by increasing speed, explosive power, endurance and strength, or by changing body composition and weight, it should be regarded as enhanced performance. In addition, it also includes any substance that improves performance by changing behavior, pain perception, or arousal levels. The main types are: stimulants, human growth hormone, erythropoietin, anabolic androgenic steroids and diuretics(Ntoumanis et al., 2014).

## **2.2 Background of Gym Development**

Bodybuilding sports has a history of more than two hundred years of development abroad, and presents a stable trend of development. After the development of the foreign fitness market, it has developed to a relatively stable and mature stage. International fitness clubs take the brand as the mainstream advantage and present a large-scale chain operation model. Pay attention to market research, set up diversified fitness programs according to the needs of the masses, and meet the needs of most fitness groups(Liu et al., 2019). For example, one trillion Wade in the United States, through more than 60 years of continuous efforts, has formed a large brand-name industry and established the largest brand in the fitness industry. Its fitness clubs have more than 200 fitness chain institutions around the world. Baolihao is also an

international large-scale chain club. At the beginning of the 20th century, it has become one of the top three national clubs. It has more than 300 chain organizations and more than 1 million members.

The fitness club was first called the health fitness club. It emerged in the United States in the 1950s. After a period of development history, it has matured. Its growth has gone through five stages, the first stage (1950-1970): the budding stage of single-function fitness clubs; the second stage (1970-1980): the development stage of single-function fitness clubs; the third stage (1980 to 1980) 1990): the budding stage of the multifunctional club; the fourth stage (1990 to 2000): the development stage of the multifunctional club; the fifth stage (2000 to 2010): the deepening development stage of the multifunctional fitness club. In the United States, 16 out of every 100 people are exercising, and the fitness clubs are large and large in number, with more than 30,000. On average, about 10,000 people own a fitness club(Jia, 2019). In China, the number of fitness clubs is only about 5,000. Based on China's population of more than 1.6 billion, on average, about 300,000 people share a fitness club. The proportion of China's fitness population is very small. Since the late 1990s, the fitness industry has gradually developed in my country(Wu Yue, 2017). With the rapid development of China's economy, fitness clubs have ushered in a climax of development in the country. Large, medium and small fitness clubs at all levels have opened, and chain clubs have also opened one after another. Continue to grow. Although there is no specific data to illustrate the number of clubs, the number of fitness clubs with a certain size has far exceeded the previous number(Zhou & Kikuchi, 2009).

## **2.3 Background of Fitness Supplements**

Studies have shown that in addition to a basic healthy diet, there is a connection between men's pursuit of muscle and the use of fitness supplements. In order to obtain good muscle performance and appearance performance, a growing number of consumers are turning to drugs that improve appearance and muscle performance. One commonly used supplement category is anabolic androgenic steroids (AAS). For example, thyroid hormones, analgesics, prohormones, fat burning supplements, nutritional supplements and other auxiliary drugs, these auxiliary drugs can help reduce the side effects of using specific fitness supplements(Kanayama et al., 2001). Studies from all over the world have shown that in different groups of fitness enthusiasts, the use of supplements is different. Limited research data is available in Central Europe, including Switzerland, Germany, and Austria. According to a research report from Switzerland, 26% of people use supplements. Research data from Germany shows that nearly 29% of people use dietary supplements(Knapik et al., 2016). Research data from the United States show that the use rate of supplements in the United States is higher than that in other countries such as Germany and Switzerland. At Lincoln University, 61% of college athletes use supplements. Among them, 61.4% use calorie substitutes, 47.3% use multivitamins, 37.2% use creatine, and 73% use energy drinks. These are

common supplements. Among them, men use energy drinks, weight gainers, dehydroepiandrosterone, hydroxymethyl butyric acid and ginseng more frequently. Women use calcium and multivitamins more frequently. Among fitness enthusiasts 18 years and older on Long Island, New York, 84.7% used fitness supplements. Among them, 42.3% of protein shakes or protein aids, 45% of multivitamins, and vitamin C were used. 34.7%, these data also include the simultaneous use of multiple fitness supplements(Morrison et al., 2004). In Canada, among the commonly used fitness supplements, the use rate of sports drinks is the highest at 22.4%, followed by the use rate of exercise bars at 14%, followed by the use rate of multivitamins and minerals at 13.5%, and the use rate of protein at 9%(Erdman et al., 2007). A large number of studies have shown that there are significant differences in supplement usage rates among fitness enthusiasts across countries(Knapik et al., 2016).

## **2.4 Preliminary Research on Fitness Clubs and Fitness Supplements**

### **2.4.1 Preliminary research on the operation and development of fitness clubs**

In foreign countries, the franchise model of fitness clubs has entered a perfect development stage, and its management and marketing methods are not easy to change, and related theoretical analysis is also more systematic, especially in the collection of business data, summary and research. They all seem more professional and complete(Saeedi et al., 2013). For example, since 1998, the American Sports Data Corporation will conduct a comprehensive survey of the consumption of all sports and fitness clubs in the United States every January, and summarize the project format, personnel distribution, and membership based on the specific conditions of all club franchisees. Data such as fees and frequency of participation (recently, new data such as the number of personal trainers and market share ratios have been added), and a tracking analysis report is issued. The International Health and Sports Club Association will regularly follow up and research every year and summarize and study the corresponding industry information, such as fitness equipment suppliers and membership of global fitness club members, and in order to promote internal communication, it will also hold an annual meeting(Zhou, 2019). The above survey results are all from the data aspect, for the fitness industry to screen investment projects and speculate on the cost and benefit, provide a good reference standard, and promote the club to join the club to closely link the theoretical level analysis with the actual investment, complement each other, and establish a benign "Circulation". Learning the corresponding management experience from abroad is not only the guiding stage of scientific theory, but also the actual implementation stage in practice(Wang & Wu, 2008). Because there is a big gap in the management and training mechanism of fitness clubs at home and abroad, there are great differences in both macro and micro

environment. For this reason, the personal coaching courses developed and designed abroad are not suitable for domestic use, but only have reference value(Jia, 2019).

Information management of human resources: In the United States, fitness clubs have developed software systems related to human resources management to facilitate club staff management. Through online training, the overall quality of employees can be effectively improved. Equity benefit plans can be specified. Encourage employees to work hard to improve themselves(Mullen & Whaley, 2010). In 2008, 369 health centers in Florida had to be closed. The number of other private clubs, YMCA, and various recreational and recreational centers also has a trend of sharp decline. In order to keep their jobs, some companies do not hesitate to waive the membership fee and provide customers with family or group fitness programs(Cheng, 2020). Due to the high fixed cost of fitness equipment, it has caused a huge blow to the industry. Today, the situation in American fitness clubs is deteriorating, almost as straight to the bottom as Wall Street stocks. After decades of development, sports clubs have matured development experience, and the market operations of foreign commercial fitness clubs have become systematic, well-managed, and complete in procedures(Wu Yue, 2017). The research results show that the goal and performance metrics are a crucial aspect, which makes the fitness club need to provide a fitness environment with high-quality services, and this is also a measure to maintain interest rates, adhere to professional standards, and strategies can change the fitness club later Have to manage quality. To this end, we should formulate a functional and practical operation and management plan in line with China's national conditions in combination with China's reality(Sofia et al., 2019).

#### **2.4.2 Research on the operation and development of Chinese fitness clubs**

Conduct research on problems in domestic operation and management. Membership consultants have a high turnover rate: due to the imperfect system of operators, such as salary and management systems, they do not pay attention to the cultivation of talents and fail to recognize the importance of membership consultants(Jia, 2019). These core factors have led to the A large number of national consultants are lost, and the talents in this area are lost after being recruited in batches. Many operators believe that the key point of their operations is coaching. Whether their business is prosperous depends entirely on their coaches. In fact, this perception is not scientific. From the perspective of corporate operations, whether the company has good operational results Depending on its operation management and business operations, if you want the club to have a good operating status, it is necessary to cultivate membership consultants who play a role as a bridge in the club, so that they have a high level of business literacy, and they are promoting them to the outside world. It is more important to show the image of the club at the time, and it is even more important to guide customers to visit and buy membership cards internally. They can let visitors have a deeper understanding of the club(Wang & Wu, 2008). According to most club managers, it doesn't matter whether members will come to the club after paying. If the



member does not come, it will save the club's expenses. In fact, this view is the key point(Huang et al., 2020).

Clubs should focus not on profitability but on the health of their members and their needs. In fact, if the old members frequently use the card, it means that they are more satisfied with the club. Assuming that the operator can make full use of it and launch the corresponding referral plan, it will be able to bring a large number of new members to the club, and it will be easier to obtain members from the club. Praise. Members who take part in fitness exercises on and off should remind them to exercise persistently, so that members realize that your concern is not from their money, but from their health. In addition, many clubs do not use appropriate methods when renewing their old members' cards, causing dissatisfaction(He & Li, 2018). In fact, the dissatisfaction is not limited to the old members. It is very likely that you are offending a large number of members. During the renewal period, we should pay more attention to the feelings of old members. After all, they are old members and loyal customers. Compared with new members, they should enjoy more discounts. For this reason, when we renew their cards, Certain discounts should be provided, such as processing at the original price. If the renewal card is provided for infrequently used members, a fixed compensation should be provided. The advantage of this is that you retain a group of loyal members. It is an important asset for your club. Decrease prices at will: During their operations, many clubs often make mistakes in lowering prices, and even worse, lower prices one after another(Qianying et al., 2019).

Therefore, in order to continuously improve the service ability in the operation stage and make the old members more satisfied, the club should formulate a plan for member reward recommendation, and take various ways to reward the new members introduced by the old members(Chao, 2015). Organize more fitness activities that do not charge any fees and can fully demonstrate the concept of "National Fitness", enhance its brand awareness, enhance its credibility, and allow member activities to cover a wider area. During some of the more critical holiday periods, the club may wish to launch some substantial price reduction activities to improve its performance. On the whole, its operation stage actually seems to be a stage of recruiting members and making them loyal members. Among them, factors such as scientific charging mechanism, complete facilities, attractive operating items, enthusiastic service, proper site selection, comfortable fitness environment, detailed fitness guidance, mature management methods, and proper promotion methods will all contribute to this -The process has an impact(Wang & Wu, 2008).

#### **2.4.3 Preliminary research on fitness supplements**

In 1994, the United States passed the Dietary Supplement Health Education Act, allowing dietary supplement manufacturers to sell without first obtaining safety and efficacy approval from the Food and Drug Administration. The Health Education Act of 1994 allows supplement manufacturers to make health claims about the effects of products on body structure or function, but cannot make treatment claims that "diagnose,

alleviate, treat, cure, or prevent" specific diseases or medical conditions. As long as there is a special supplement label indicating the active ingredients and providing a complete list of ingredients, you can declare the enhanced performance, whether effective or not. In 2010 alone, global dietary supplements used for weight loss and exercise brought a total of US\$27.7 billion in profits to related companies(Evans et al., 2012).

Performance enhancing substance refers to any substance taken in a non-drug dose, specifically used to improve athletic performance and improve physical condition. A substance should be considered enhancing performance if it contributes to athletic performance or physical vitality by increasing speed, explosive power, endurance and strength, or by changing body composition and weight. The use of PES, whether illegal or legal, can occur at all levels of sports activities. Recent studies have shown that the global population with high AAS usage is no longer limited to elite competitive bodybuilders and athletes, and more fitness enthusiasts are also involved(Brennan et al., 2017). Studies have shown that most of the age of using AAS is before the age of 30. The main motivation for using AAS is to improve appearance, strength, muscle performance and athletic performance. Although drugs such as diuretics, erythropoietin, stimulants, AAS and human growth hormone have the ability to significantly enhance performance, they may cause a variety of side effects when taken for a long time(Brennan et al., 2017).

Table 2.1 Overview of the fitness supplements

<b>Authors</b>	<b>Country</b>	<b>Purpose</b>	<b>Type of source</b>	<b>Summary points</b>
Goston & Correia (2010)	Brazil	Assess supplement intake and influencing factors.	Journal article	People who exercise in the gym have a high intake of supplements and are usually self-prescribed.
Gizis & Shorter (2004)	USA	Investigate the use of supplements among people who exercise at the Long Island Gym in New York.	Journal article	The reasons for working on an exercise program have influenced the use of supplements. Bodybuilders consume PRO, creatine and ephedra more frequently.
Kanayama et al. (2001)	USA	Attempt to assess the prevalence of androstenedione	Journal article	Many people are currently using powerful drugs that

		and ephedrine forms of drug use in American gymnasiums.		may lead to abuse or dependence.
Bailey et al. (2013)	USA	Investigating the reasons why U.S. adults use dietary supplements.	Journal article	The motivation reported by supplement users is related to overall health. The use of supplements is related to more favorable health and lifestyle choices. Less than a quarter of the supplements used by adults recommended by a doctor or healthcare provider are used.
Nagar (2020)	India	Reveals the motivation behind the consumption of fitness supplements, especially fitness supplements.	Journal article	The main findings of this study indicate that the benefits associated with taking fitness supplements are the most important predictors of attitude.

#### 2.4.4 The Theory of Planned Behavior (TPB)

The theory of planned behavior is a social psychology model whose main function is to understand the relationship between behavior and attitude (Yousafzai et al., 2010). Researchers believe that the theory of planned behavior (TPB) originated from the theory of reasonable action (TRA), its scientific nature has been fully verified, and it is widely used by researchers to understand and predict the use of user technology (Pelling & White, 2009). Ajzen (1991) proposed the theory of planned behavior. It also points out that the premise of planned behavior theory is the assumption that humans usually act in a wise manner, taking into account available information and acting implicitly. In the theory of planned behavior, behavior control directly affects the intention to execute the behavior, and when the behavior intention is executed, it may directly affect the user's behavior (Ajzen, 1991).



Table 2.2 Summary of Previous Study

NO.	Authors	Year	Sample Size	Prevalence	Key finding
1	Baker et al	2006	146	AAS use (70%)	The main drugs used by AAS users were Ephedrine (44%), Growth Hormone (24%), Tamoxifen (22%), Clenbuterol (21%).
2	Al-Falasi et al	2009	154	AAS use (22%)	Misuse of bodybuilders, weightlifters and Commercial Club users was significantly higher.
3	Grace and Davies	2001	106	AAS use (58%)	Polypharmacy was evident.
4	Petrocelli	2008	37	-	Respondents did not demonstrate any anxiety over the possible side-effects
5	Haerine- jad et al.	2016	453	PES use (51.7%)	The most prevalent agents abused PES were AAS (79.4% of participants)
6	Wazaify et al	2014	353	PES use (8.8%)	Use of AAS and other hormones
7	Silva et al.	2003	209	AAS use (19%)	Dietary supplements, as well as other associated drugs, were used.
8	Nogueira et al.	2014	510	AAS use (20.6%)	Use of AAS was related to the use of dietary supplements
9	Usman et al.	2015	310	AAS use (64%)	Misuse of AAS was significantly higher among those with high education level.
10	Korkia & Stimson	1997	1667	AAS use (7.4%)	AAS use was reported in all areas studied. Use of «cocktails» of

					drugs, blended with the use of social drugs and alcohol
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#### **2.4.5 The structural equation modeling (SEM)**

Structural equation modeling (SEM) refers to structural analysis, covariance and structural correlation analysis, It is widely used in behavior to investigate the relationship between observable and latent variables(Bentler & Peter, 1990). In many cases, structural equation modeling has become an important statistical tool for studying the relationship between potential structures and observed indicators. SEM is widely used in market research. The purpose of SEM is to check the model to test whether the presented model is consistent with the data, and to measure the relationship between the model testing infrastructure and observable indicators. At the same time, the structural model captures the relationship between endogenous variables and exogenous variables.(J. F. Hair et al., 2012). Based on the content and variables of this research, this research is suitable for investigation and analysis using SEM.

## **2.5 Research Hypothesis Development**

This research aims to explore the impact of different factors on the operation and development of fitness club, such as the quality of health club managers, profit models, price selection, location selection, scale and operating status, medical risk insurance, fitness meal services, personal trainer services, etc.

### **2.5.1 Attitude toward gym supplements and health consciousness**

A large body of academic research on health awareness has shown that people with high health concerns tend to supplement their diet through supplemental consumption(Quinones et al., 2013). Few theorists assert that consumers perceive supplement use as a means of compensating for an unhealthy lifestyle, also known as the alternative hypothesis under this hypothesis, supplement users believe that because certain supplements are as healthy as fruits and vegetables, they can simply replace the good old diet. These consumers may have unhealthy lifestyles but still have a positive attitude towards supplement consumption. Instead, the researchers found that people who took supplements had healthier eating habits and that their supplement consumption was driven by their health awareness(Dickinson et al., 2014).

Based on the above discussion, the use of supplements may be motivated by the desire to stay healthy. Therefore, people who are highly concerned about their health are more likely to form a positive attitude and a higher willingness to buy fitness supplements(Jeongseon Kim et al., 2010). Consumers' health consciousness is toward attitude toward Gym supplements have a positive impact. So put forward the hypothesis:

*H1. Consumers' health consciousness has positive impact on attitude toward gym supplements.*

### **2.5.2 Attitude toward gym supplements and social influence**

Social influence has long been regarded as an important factor influencing consumer behavior. Social psychologists describe "social influence" as the process by which a person's attitudes, beliefs, or behaviors are altered by the presence or actions of others, including our tendency to conform to others (Ajzen, 1991). There are two basic forms of social influence: explicit expectations and implicit expectations. Explicit expectations are clear and formally prescribed rules that need to be followed and obeyed, while implicit expectations are unspoken rules that individuals are expected to follow, leading to individuals voluntarily changing their behavior to mimic that of their peers. The researchers found that the inclusion of group norms, especially those associated with friends, improved the accuracy of predicting adolescents' consumption of low-nutrient, high-energy foods. It was also found that perceived social influence was associated with many health behavior outcomes, including health behavior intentions. Applied in the context of fitness supplements, individuals may make inferences by observing the behavior of reference groups, such as health professionals and physicians, and significant others, such as friends and family, and consume fitness supplements due to the expectations of those significant others (Marangunić & Granić, 2015). Based on empirical evidence from previous research reports supporting the positive influence of social influence on attitudes and behaviors related to supplements, the following hypothesis is formed:

*H2. Social influence has positive impact on attitude toward gym supplements.*

### **2.5.3 Perceived health risk and attitude toward gym supplements**

Theory of planned behavior (TPB) has been a successful model for predicting human behavior in a variety of environments (Baker et al., 2007). However, this model does not explicitly consider the psychological concept of risk and the impact of risk perception on consumer decision-making. For example, in the modified theory of planned behavior TPB, risk is considered as an additional factor to the standard theory of planned behavior TPB predictors. Perceived risk is also the core structure of health behavior models (Huang et al., 2020). According to these models, perceptions of food safety risks may help shape individual behaviour (Jiyoung Kim & Lennon, 2013).

There is some evidence that the use of exercise and dietary supplements can negatively affect health (Geller et al., 2015). Researchers believe that sports supplements have a high risk and may have more serious adverse effects on health than any dietary supplement (Newberry et al., 2001). According to the report, sports drinks can have adverse effects on renal function and electrolyte levels. Studies have found that the intake of nutritional supplements can cause harm to teenagers and children, and large doses of minerals and vitamins are potentially toxic (Fumich & Essig, 1983). Food-related risk perception is an important determinant of food purchases in several

EU countries. If the risks are greater than the benefits involved, people will refuse to purchase(Mazzocchi et al., 2008).

Previous studies and related literature have suggested that risk perception is central to influencing attitudes towards supplement consumption. Based on the available literature, it is assumed that consumers' perceived risk of supplement use generally has a negative impact on their attitudes and intentions to purchase fitness supplements. Therefore, it can be assumed that;

*H3. Perceived health risk has positive impact on attitude toward gym supplements.*

*H6. Perceived health risk has positive impact on the intention to purchase them.*

#### **2.5.4 Perceived health benefit and Attitude toward gym supplements**

The high level of perceived benefits generated from consumption may accelerate attitudinal orientation and consequent behavioral intention. This link between perceived benefits and positive attitudes has been empirically tested in previous research(Huang et al., 2020). The researchers concluded that the perceived benefits from supplements significantly influenced adolescents' choice of supplements. In an interesting study conducted by Holden and Kars (2010), it was reported that participants continued to take supplements even though scientific evidence showed they were ineffective due to their belief in their benefits. In other words, people extrapolate from a general impression of the effectiveness of a supplement to other unknown attributes or attributes with which they have no experience(Montaña, 1992), leading to an overestimate of the overall benefit of supplement consumption.

Therefore, it is reasonable to infer that the perceived benefits related to the consumption of fitness supplements will have a positive impact on consumers' attitude and willingness to buy fitness supplements, and it is assumed that:

*H4. Perceived health benefit has positive impact on attitude toward gym supplements.*

#### **2.5.5 Relationship between intention to purchase gym supplements and attitude toward gym supplements**

Attitude is considered to be a consistent predictor of behavioral intent related to food choices(De Cosmi et al., 2017). Earlier studies have found that attitudes have a strong influence on willingness to purchase functional and organic food. However, there is a lack of understanding about consumer attitudes and purchase intentions towards supplements(Nagar, 2020). Therefore, this study attempted to fill the existing gap by hypothesizing that there is a positive correlation between attitudes toward gym supplements and the intention to consume them. Anyway, suppose:

*H5. Attitudes toward gym supplements has positive impact on the intention to purchase them.*

## **CHAPTER 3**

### **RESEARCH METHODOLOGY**

This chapter covers population and sample selection, data collection, research methods and reliability analysis of research instruments. Therefore, the additional information in this chapter is as follows.

#### **3.1 Research Method**

In the questionnaire, the basic demographic data of respondents have been collected since the release of the demographic questionnaire. The Likert 5-point scale questionnaire aims to collect quantitative data on the factors that influence the use of fitness supplements by fitness enthusiasts. In order to confirm the validity and reliability of the questionnaire and whether the composition of the questionnaire is correct, the research tools were investigated in this study. Thirty-five researchers checked the research tools and revised the questionnaire questions. The survey was conducted in November 2020. In order to accurately analyze the collected data, we used AMOS 24.0 and SPSS 26.0. Use SPSS 26.0 analysis software to test the reliability statistics and demographic information of the survey data, and then use AMOS 24.0 analysis software to perform exploratory factor analysis (EFA) and structural framework (SEM) analysis on the research framework.

#### **3.2 Research Design**

This study mainly explores the relationship between Health Consciousness, Social Influence, Perceived Health Risk, Perceived Health Benefits, Attitude and Intention to Purchase when fitness enthusiasts in gyms in Binzhou City, China purchase and use fitness supplements. In order to investigate the relationship between Health Consciousness, Social Influence, Perceived Health Risk, Perceived Health Benefits, Attitude and Intention to Purchase, a survey data collection was conducted. Participants need to complete a questionnaire. There are many types of research, including exploratory research, descriptive research and contingency research. However, in this research, the appropriate type of research is based on descriptive research, that is, describing the answers to illustrate the research questions. The article does not involve the emotional or personal injury of the interviewee. The entire survey does not involve sensitive topics or vulnerable groups such as children. The interview content fits the subject and does not disclose the interviewee's consent. At the same time, all interviewees agreed to be interviewed in person on Wechat. In this study, a

sample of 450 respondents from 10 gyms in Binzhou City, China, a total of 450 questionnaires were distributed, 435 valid questionnaires were collected, and the structural equation model was used for data analysis.

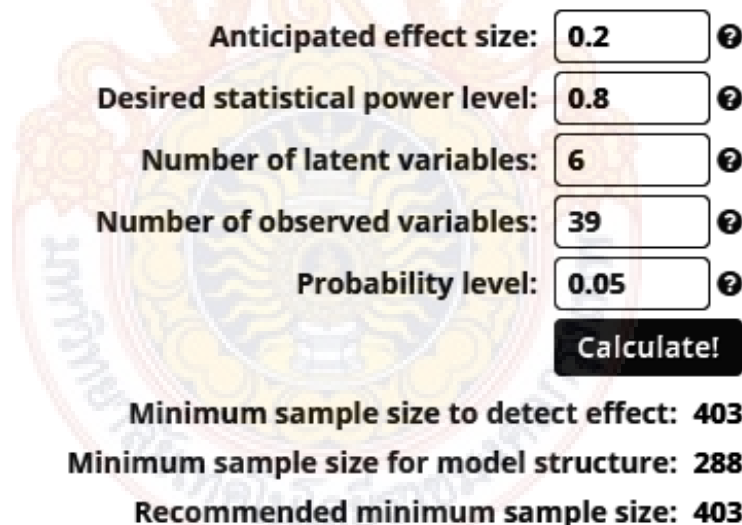
### 3.3 Population and Sample Selection

#### 3.3.1 Population

The data used in this study was obtained through a face-to-face survey of fitness enthusiasts in 10 gyms in Binzhou City. All respondents in this study agreed to participate in the survey through WeChat or in person. This survey prepared some gifts for the participants to thank the respondents for their active participation.

#### 3.3.2 Sample size

The researcher will determine sample size by applying an equation proposed by Yamane (1967) at confidences level of 95% and precision levels = 0.05. The minimum sample size is 403. However, the researcher selected 450 for sample size.



The image shows a sample size calculator interface with the following fields and values:

- Anticipated effect size: 0.2
- Desired statistical power level: 0.8
- Number of latent variables: 6
- Number of observed variables: 39
- Probability level: 0.05
- Calculate! (button)
- Minimum sample size to detect effect: 403
- Minimum sample size for model structure: 288
- Recommended minimum sample size: 403

Figure 3.1 The sample size of this research

Source: <https://www.danielsoper.com/statcalc/calculator.aspx?id=89>

### 3.4 Design of Questionnaire and scale

In this study, questionnaire survey is used to collect the data of relevant literature review. The questionnaire can be divided into three parts;



Part 1: Closed-end questions about the demographic characteristics of the participants, including gender, and income.

1. Frequency of visiting gym

- ☐ Never
- ☐ < 3times/week
- ☐ 3–5 times/week
- ☐ >5 times/week

2. Your gender:

- ☐ male
- ☐ female

3. Your age is over

- ☐ < 20
- ☐ 20-35
- ☐ 36-50
- ☐ > 50

4. Your income (monthly)

- ☐ Less than 3000 RMB
- ☐ 3001-6000 RMB
- ☐ 6001-9000 RMB
- ☐ More than 9001 RMB

5. Your occupation:

- ☐ Athlete/Runner
- ☐ Student
- ☐ Working
- ☐ Professional Bodybuilder

6. Your Gym supplement use situation

- ☐ User
- ☐ Non-user

Part 2: 14 closed-ended answer questions about 5 factors that influence purchase intention, including:

Table 3.1 Number of questionnaires for 6 factors that affect purchase intention

Health Consciousness	9 Questions
Social Influence	10 Questions
Perceived Health Risk	4 Questions
Perceived Health Benefits	7 Questions
Attitude	4 Questions
Intention to Purchase	5 Questions

This part is measured on an interval scale by using a Five-point Likert Scale to measure the level of agreement.

Table 3.2 Five-point Likert Scale

Strongly Disagree	1 points
Disagree	2 points
Neutral	3 points
Agree	4 points
Strongly Agree	5 points

The following questions are the further meaning of each question mentioned in the questionnaire.

Table 3.3 Summary of source for questionnaire items

Health Consciousness	I think about my health a lot.
	I am conscious about my health.
	I usually focus on how I feel about my health.
	I am constantly examining my health.
	I am alert to changes in my health.
	I am usually aware of my health.
	I am aware of the state of my health as I go through the day.
	I notice how I feel physically as I go through the day.
	I am very involved with my health.
Attitude	I think the money spent on gym supplements is



	worthwhile.
	It is important to take gym supplements.
	It is valuable to take gym supplements.
	It is useful to take gym supplements.
Perceived Health Risk	I'm worried about the side effects of taking fitness supplements.
	I am worried that consumption of gym supplements would cause health problems.
	I am worried that consumption of gym supplements may cause potential risk to my health.
	Overall, I think that taking gym supplements would be risky for health.
Intention to Purchase	I intend to take Gym Supplements.
	I plan to take Gym Supplements.
	I want to purchase Gym Supplements.
	I will try to take gym supplements from now on (if I am not already taking them).
	It is likely that I will take gym supplements (if I am not already taking them).
Perceived Health Benefits	Regular consumption of gym supplements prevents health related problems.
	I believe I would feel better, health wise, if I consume gym supplements.
	Regular consumption of gym supplements would help to build good health.
	Consumption of gym supplements also improves the way the body feels and looks.
	Regular consumption of gym supplements cuts down chances of poor health.
	Consumption of gym supplement would make me feel good about myself.
	Overall, I think that taking gym supplements would be beneficial for health.
Social Influence	I rarely take a fitness supplement until I'm sure an expert agrees.
	It is important that others (friends/family/experts) agree with my choice of gym supplement (before I act).
	If I were to use gym supplements, I would choose those gym supplements that I think others will approve of.
	I would like to know which gym supplements will make good impressions on others.

	I would achieve a sense of belonging by making the same gym supplement choices that others do.
	If I want to be like someone, I would try to make the same gym supplement choices that they do.
	I will be able to identify with other people by making the same gym supplement choices that they do.
	If I have little experience with a gym supplement, I would try to find out about it from experts or other sources.
	I would consult other people to help choose the best gym supplement alternative available.
	I would frequently gather information from different sources before I start using a gym supplement.

### 3.5 Collection of Data

The 39-item scale was subjected to exploratory factor analysis (EFA) using varimax rotation. After EFA converged under one factor, all four attitudes remained. Also, all the nine items of health consciousness were retained after EFA. Similarly, all five items of purchase intention were retained.

### 3.6 Research Methodology

#### 3.6.1 Reliability test

Use Cronbach's alpha test to test the reliability of each variable. If a musical instrument has a minimum alpha score of 0.6 and an overall reliability of 0.7 or higher, it has good reliability (Bagozzi, 1982). The greater the accuracy factor, the higher the confidence of the measurement. Scholar DeVellis (1991) outlines the following: 0.60~0.65 (preferably not); 0.65~0.70 (minimum acceptable value); 0.70~0.80 (very good); 0.80~0.90 (very good) Therefore, a good reliability scale or questionnaire should be within an acceptable range of 0.80 to 0.70 to 0.80. The sub-scale is preferably above 0.70, and is acceptable between 0.60 and 0.70.

Table 3.4 Criteria of Reliability

<b>Cronbach's Alpha</b>	<b>Desirability level</b>	<b>Reliability Level</b>
Less than 0.30	Unacceptable	Very Low
0.30-0.49	Poor	Low
0.50-0.69	Fair	Medium
0.70-0.79	Good	High
0.80-1.00	Excellent	Very High

### 3.6.2 Convergent validity

The convergence efficiency of the measurement model needs to be evaluated by all standardized factor loads exceeding the minimum standard of 0.50 in the project (FORD et al., 1986). The composite reliabilities had desirable levels for all the constructs, ranging from 0.815 to 0.969 (Bagozzi & Yi, 1988). The average variance extracted (AVE) were above the recommended level of 0.50 further supporting convergent validity (Fornell & Larcker, 1981). Additionally, scale reliability values were well above 0.7. Thus, the model fulfilled the requirement of convergent validity as suggested by Hair et al., (2010).

### 3.6.3 Discriminant validity

Discriminant validity for the model was assessed using the procedures recommended by Fornell and Larcker (1981). All the values of AVE for each construct were higher than the corresponding values of the squared multiple correlation among the constructs, which provides evidence for the discriminant validity of all structures.

### 3.6.4 Path analysis

The main purpose of this research is to understand the influencing factors to gym fitness enthusiasts' attitude and purchase intention. In order to analyze the relationship in the research framework, we used SPSS 26.0 and AMOS 24.0 to conduct a structural equation model (SEM)-based path analysis.

## 3.7 Conceptual Framework

This study proposes to extend this TPB framework to the supplement consumption field by combining three additional predictive factors of intention: perceived risk and benefit, health awareness, and social impact contained in the original TPB. The following sections provide the reasons for taking health awareness, social impact and risk-benefit perception as additional variables in the TPB. Studies have shown that the measurement of health awareness may be a useful part of the TPB model because it has been found to significantly improve the model's ability to predict purchase intention in the context of dietary supplements (Royne et al., 2014). Conner

(1996) believes that TPB does not fully consider the cognitions related to benefits and risks or susceptibility, which are common in other healthy behavior models. Terry & Hogg (1996) confirmed that group norms of friends and peers significantly improved the intention to be consistent with group behavior. Therefore, there seems to be strong theories and experience to support the inclusion of the group norm structure into the TPB. Therefore, based on the existing conceptual and empirical research, this study further tests the ability of TPB. And three additional predictors of intention in the use of gym supplements. The extent to which additional variables provide predictive power beyond the existing components of TPB will empirically show their usefulness as a supplement to TPB.

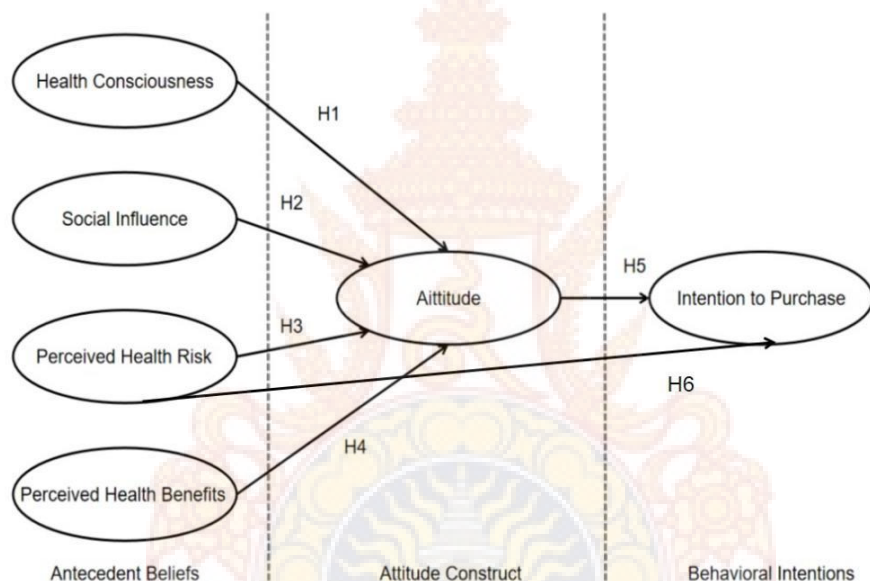


Figure 3.2 The Conceptual Framework of this research

Source: Constructed by author

## CHAPTER 4

### DATA ANALYSIS

#### 4.1 Reliability test of Research instrument

Descriptive research is a common project research method. It refers to the different factors faced in different aspects of research, data collection, and data recording, focusing on the static description of objective facts. Most marketing research is descriptive. Researching customers' purchase intentions for products with traditional designs of your culture is defined as marketing research; therefore, the company's marketing operations strategy may use descriptive research.

The purpose of descriptive research includes describing the characteristics of a fixed group, investigating the relationship between social influence, perceived health benefits, perceived health risks, and fitness enthusiasts' purchase attitude and intention in the gym, and making predictions accordingly.

Quantitative research is to determine the number of things in a scientific research, that is, to represent samples with many problems and phenomena, and then analyze, test and explain, so as to obtain meaningful research methods and processes. Sampling survey is not a comprehensive survey. This is a survey method used to survey certain units of all respondents and to estimate and infer all responses on this basis. The researchers distributed questionnaires face to face. This study verified the questionnaire through a pilot testing. The entire pre-test had 50 subjects, and the survey data was analyzed through EFA.

##### 4.1.1 Exploratory factor analysis

Table 4.1 KMO and Bartlett's test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.780
Bartlett's Test of Sphericity	Approx. Chi-Square	1613.560
	df	630
	Sig.	.000

Notes: N=50

The KMO values of all the scales were found to be above 0.70 and the total variance explained by all the constructs was above 60%(Hair et al., 2010).

Table 4.2 Cronbach's Alpha of construct scales

<b>Construct</b>	<b>No. of question(s)</b>	<b>Cronbach's Alpha</b>
Health Consciousness	9 Questions	0.883
Perceived Health Benefits	10 Questions	0.919
Attitude	4 Questions	0.937
Perceived Health Risk	7 Questions	0.934
Social Influence	4 Questions	0.790
Intention to Purchase	5 Questions	0.968
Total	39 Questions	0.897

Notes: N=50

It is found that the Cronbach's Alpha value of all scales is above 0.70, of which the Cronbach's Alpha value of Social Influence is 0.790, and the Cronbach's Alpha value of all other items is above 0.80. All items meet the requirements.

## 4.2 Census Data Analysis

Table 4.3 Demographic Data

<b>Variables</b>	<b>Frequency (f)</b>	<b>Percentage (%)</b>
Male	248	57.01
Female	187	42.99
Total	435	100%

Notes: N=435

As shown in Table 9, approximately 42.99% (N = 187) of the participants were women, while men accounted for 57.01% (N = 248).

Table 4.4 Frequency of Monthly Income

<b>Variables</b>	<b>Frequency (f)</b>	<b>Percentage (%)</b>
Below 3000 RMB	62	14.3%
3001-6000 RMB	218	50.1%
6001-9000 RMB	78	17.9%
More than 9001 RMB	77	17.7%
Total	435	100%

Notes: N=435

As shown in the table, about 50.1% (N = 218) of participants have a monthly income between 3001-6000 yuan, while those with a monthly income of less than 3000 yuan accounted for 14.3% (N = 62). 6001-9000 yuan accounted for 17.9% (N = 78), and income above 9001 yuan accounted for 17.7% (N = 77).

Table 4.5 Frequency of Gender

<b>Variables</b>	<b>Frequency (f)</b>	<b>Percentage (%)</b>
< 20	40	9.2%
20-35	283	65.1%
36-50	96	22.1%
>50	16	3.6%
Total	435	100%

Notes: N=435

As shown in the table, approximately 9.2% (N=40) of the participants were younger than 20 years old, and 65.1% (N=283) were 20-35 years old. 36-50 years old accounted for 22.1% (N=96), and over 50 years old accounted for 3.6% (N=16).

### 4.3 Model Goodness of Fit

Table 4.6 Measurement statistics of construct scales

<b>Construct</b>	<b>Standardized factor loadings</b>	<b>AVE</b>	<b><math>\alpha</math></b>	<b>CR</b>
<b>Health Consciousness</b>		0.531	0.883	0.889
HC1	0.70			
HC2	0.75			
HC3	0.65			
HC4	0.76			
HC5	0.69			
HC6	0.72			
HC7	0.71			
HC8	0.67			
HC9	0.75			
<b>Perceived Health Benefits</b>		0.683	0.919	0.928
PHB1	0.82			
PHB2	0.84			
PHB3	0.75			
PHB4	0.85			
PHB5	0.92			
PHB6	0.79			
PHB7	0.69			
PHB8	0.91			
PHB9	0.73			
PHB10	0.82			
<b>Attitude</b>		0.789	0.937	0.937
A1	0.87			
A2	0.89			
A3	0.91			
A4	0.90			
<b>Perceived Health Risk</b>		0.780	0.934	0.933
PHR1	0.94			
PHR2	0.83			
PHR3	0.88			
PHR4	0.81			
PHR5	0.79			
PHR6	0.72			
PHR7	0.85			
<b>Social Influence</b>		0.638	0.790	0.907



SI1	0.68			
SI2	0.73			
SI3	0.65			
SI4	0.82			
<b>Intention to Purchase</b>		0.861	0.968	0.968
IP1	0.92			
IP2	0.88			
IP3	0.90			
IP4	0.94			
IP5	0.96			

Notes: N=435

After evaluating the convergence validity of the measurement model, it was found that the standardized factor loads for all items exceeded the minimum standard of 0.50. The composite reliabilities had desirable levels for all the constructs. The average variance extracted (AVE) were higher than the recommended level of 0.50. Further supporting convergent validity, and the reliability value of the scale is much higher than 0.7. Therefore, the model satisfies the requirement of convergence validity(Hair et al., 2010).

Table 4.7 Computation of degrees of freedom

Minimum was achieved
Chi-square = 931.511
Degrees of freedom = 450
Probability level = .000

Notes: N=435

Table 4.8 The model fit summary showing the goodness of fit

Goodness of fit	Recommended values	SEMs value	Remarks
SRMR	<0.08	0.043	Good fit
RMSEA	≤0.10	0.060	Good fit
NFI	≥0.90	0.881	Acceptable fit
GFI	≥0.90	0.867	Acceptable fit
CFI	≥0.90	0.888	Acceptable fit
CMIN/df	≤ 3.0	2.07	Good fit

Notes: N=435

The measurement model was examined using crucial goodness-of-fit indices. As suggested by Hair et al. (2010), overall, the analysis revealed a good fit of the measurement model with a significant chi-square value of 931.511,  $df = 450$ ,  $p < .000$ , a comparative fit index (CFI) value of 0.888, a goodness of fit (GFI) value of 0.867, a normed fixed index (NFI) value of 0.881, the standardized root-mean-square residual (SRMR) value of 0.043 and a root-mean-square error of approximation (RMSEA) value of 0.060. This indicates that the measurement model shows a satisfactory fit before explaining the causal path of the structural model.

Table 4.9 Discriminant validity of the constructs

Constructs	PI	Att	PB	PR	SI	HC
PI	0.928	0.850	0.736	-0.561	0.355	0.355
Att		0.888	0.818	-0.510	0.408	0.310
PB			0.827	-0.492	0.417	0.281
PR				0.883	-0.290	-0.313
SI					0.799	0.124
HC						0.729

Note: All correlations are significant at 0.01 level;  $N=435$ .

#### 4.4 Hypotheses Test

The main purpose of this research is to understand the influencing factors of fitness enthusiasts on fitness supplements and analyze consumer behavior. In order to analyze the relationship in the research framework, the researchers used a structural equation model (SEM)-based path analysis. Figure A shows the results of this analysis, and Table 13 shows the standardized estimates coefficients and hypothetical results of each path.

Table 4.10 Results of structural equation model analysis. Relationships

Relationships	Hypotheses	Estimate	p-value	Result
Health Consciousness >> Attitude	H1	0.222***	0.001	Supported
Social Influence >> Attitude	H2	0.314***	0.001	Supported
Perceived Health Risk >> Attitude	H3	-0.21*	0.05	Supported
Perceived Health Benefits >> Attitude	H4	0.34**	0.01	Supported
Attitude >> Intention to Purchase	H5	0.82*	0.05	Supported
Perceived Health Risk>> Intention to Purchase	H6	-0.28**	0.01	Supported

Note: \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ ;  
N=435

An analysis of data using structural equation modeling procedure revealed that all structural path coefficients were positive (except for perceived risk) and significant, indicating a better understanding of gym supplement acceptance behavior. From the standardized estimates, the hypotheses 1 revealed significant and large effects of health consciousness on attitude ( $\beta = 0.222$ ,  $p < .001$ ). Further analysis shows that social influence has a significant positive and moderate effect on fitness supplement attitudes ( $\beta = 0.314$ ,  $p < .001$ ), which supports Hypothesis 2. The perception of the benefits of attitudes toward fitness supplements ( $\beta = 0.34$ ,  $p < 0.05$ ). These findings support hypothesis 3, 4 and 6. Analysis of data also confirmed a positive and significant large-sized effect of attitude on the intention to purchase gym supplements ( $\beta = 0.82$ ,  $p < 0.01$ ).

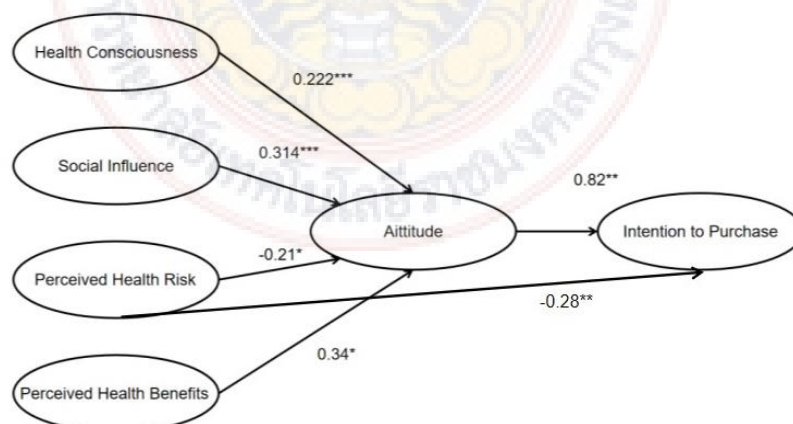


Figure 4.1 Output of structural model with standardized estimates

Note: \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ ;  
N=435.

The results of the structural equation model show that the p-value determines its statistical significance, and the two risks of data have significant effects ( $\beta=-0.21$ ,  $p<0.05$ ;  $\beta=-0.28$ ,  $p<0.01$ ). The negative sign of interaction means that perceived health risk has a negative impact on purchase attitude and purchase intention. The perception of food-related risks is an important determinant of food purchases. If the risk is greater than the benefit, people will refuse to buy, so the perceived health risk will have a negative impact on buying attitude and willingness to buy. The more consumers worry about the risks of fitness supplements, the lower their buying attitude and willingness to buy. Hypothesis 3 and Hypothesis 6 are supported. This is also consistent with the results of previous studies (Fumich & Essig, 1983; Newberry et al., 2001; Mazzocchi et al., 2008; Geller et al., 2015). (Fumich & Essig, 1983; Newberry et al., 2001; Mazzocchi et al., 2008; Geller et al., 2015).



## CHAPTER 5

### CONCLUSION AND DISCUSSION

#### 5.1 Conclusion and Discussion

Interestingly, research to date has primarily focused on the factors that influence consumers' choice of dietary supplements. By contrast, there is little empirical evidence of research on variables affecting consumers' choice of sports and fitness supplements. Even fewer studies have explored factors affecting supplement consumption behavior among gym enthusiasts. The broad objective of the present study was to test the validity and applicability of the extended TPB framework by identifying a range of factors that may influence gym supplement use. The current findings confirm the utility of employing the e-TPB model in exploring the determinants of gym supplement use and enrich data from numerous studies using this framework. In this context, a model was proposed to explore the influence of health consciousness, social influence and risk-benefit perceptions in the field of gym supplement selection. Additionally, the results of the study also reflect upon the relationship between attitude and intention to purchase gym supplements. Accordingly, this study provides support to earlier studies that advocate the e-TPB. The first finding of this study is the confirmation that health consciousness is positively related to attitude toward gym supplements. Those who were more health conscious were found to be more likely to have positive attitudes toward gym supplements and were more likely to have intentions to use gym supplements. Past researches have considered health consciousness as an important predictor of health-related attitudes in different contexts, such as fitness and food health claims; however, it has not been considered in the context of gym supplement use. Therefore, the findings of this study are potentially important because it shows that the need to pay attention to health awareness and participate in health prevention behavior can affect the attitude and behavioral intention of supplement use. In line with previous studies, health consciousness was found to be significantly related to attitude toward supplements but did not have the strongest effect. In addition, findings support that perceived benefits of using gym supplements had the strongest effect on attitude and behavioral intentions indicating the need for potential health campaigns to highlight specific benefits associated with supplement consumption (Zhao et al., 2020). This also has implications for health educators, who may focus on increasing perceived benefits associated with supplemental consumption and reducing perceived risks. Similarly, the present study found that perceived risks of using gym supplements affected consumers' attitude toward gym supplements. Accordingly, this reinforces the empirical findings of Roynes et al. (2014) and O'Dea (2003) that risk-benefit perceptions are critical predictors of behavioral intentions in the context of

supplement use. This study also corroborates the earlier findings of Dunn et al. (2001) that social influence significantly predicts intention to use supplements. Identification of social influence as a factor affecting attitude and behavioral intentions in the context of gym supplements is of interest because it indicates that gym supplement purchasing recommendations may be made more effective if delivered through social interactions. The power of social influence suggests the possibility of utilizing the peer/social network to cultivate and reinforce a set of pro-supplement behavioral norm. In line with previous studies, intention to consume gym supplements was strongly predicted by attitude toward gym supplements. Similar results have earlier been reported by a number of applications of the TPB and suggest that attitudes are an important predictor of intentions even in the context of gym supplement use. These are also in line with the work of other researchers, such as Dowd and Burke (2013) who applied the concept in the context of sustainably sourced food. Similar findings were also reported by Rezai et al. (2014) and Al-Swidi et al. (2014). Furthermore, the significant mediation effect suggests that attitudes play an important role in the study of gym supplements. In order to provide a reliable assessment of factors related to fitness supplements, scholars should continue to assess their attitudes towards supplements in future research.

## **5.2 Limitations**

This study has advanced our knowledge by clarifying the roles of health consciousness, risk-benefit perceptions and social effects of taking supplements in predicting attitudes and willingness to purchase fitness supplements. Despite its contributions, findings of the present research need to be considered in light of certain limitations. First, the present study is limited in scope to only three critical factors as motives influencing consumers' attitude and intentions. Future research could conduct empirical investigations to explore other variables affecting the outcome. For example, researchers could examine the effect of social comparisons and body satisfaction on intentions to use fitness supplements. Specifically, such an analysis will help predict the purchase of dietary and nutritional supplements in light of consumers' self-image and the likelihood of holding a gym membership.

## **5.3 Research Contributions**

The current research results provide a unique contribution to the literature by deeply understanding consumers' attitudes towards specific types of supplements for fitness enthusiasts. Specifically, the present research makes three significant contributions to the literature. To begin with, this research is arguably the first empirical study to explicitly examine the motives influencing consumers' attitude and behavioral intentions toward gym supplements. While past studies have contributed a considerable amount to understanding why individuals consume different types of dietary supplements, the present study brings to light the motives behind the consumption of



fitness supplements, specifically gym supplements. The results will help researchers understand why fitness enthusiasts prefer fitness-related supplements that traditional dietary supplements fail to meet their nutritional needs. Researchers have much to learn about this section of consumers by understanding their specific needs and motivations to consume fitness supplements. Second, this study advances the literature related to the effect of health consciousness, perceived risk-benefit and social influence on behavioral intentions by showing that these variables can influence individuals' intention to consume gym supplements indirectly by positively affecting attitude. Additionally, with a few possible exceptions (e.g. Bauman, 1980; Beyth-Marom et al., 1993), this study is the only recent study that contributes to the risk-benefit literature by examining both the perceived risks and perceived benefits associated with supplement consumption. The findings, therefore, contribute to the literature on TPB which is considered as one of the fundamental theories but with limited application in literature. Third, the young gym-goers represent an important segment in the health supplement category. Results signify that the cohort of young consumers who consciously look after their health and well-being make up for a significant segment that requires further socio-psychological investigations. Study reveals that there is relatively less knowledge about the demographics of this important segment and identifies the need for active research on issues related to young consumers of fitness supplements.

## **5.4 Practical Contributions**

This research also provides relevant management enlightenment for enterprise managers and decision makers who seek to formulate marketing strategies and encourage supplementary consumption. It informs marketing practitioners, health professionals, and public policy agencies about the key predictors of gym supplement consumption. Marketers will do well to understand these drivers of supplement consumption behavior as it will enable them to plan and design effective product offerings and formulate marketing strategies that encourage supplement consumption. The findings revealed that consumers' attitude affects their intention to purchase supplements and that attitude toward supplements is itself shaped by perceived risk and benefit, social influence and health consciousness of gym-goers. For a developing economy such as China, nurturing and developing these pro-fitness tendencies by way of health and nutrition education may be of great significance. Some degree of risk perception is associated with the use of certain forms of fitness supplements (Newberry, et. al, 2010). To overcome this trepidation, marketing practitioners and policymakers should actively disseminate information to educate young consumers about the health benefits of using supplements. Also, in order to maximize consumers' awareness of the need for supplements and to reduce resistance to adopt supplements, effective communication strategies need to be developed. These communication strategies should take into consideration both the perceived benefits and risks associated with

supplement use by highlighting the benefits and addressing any concerns to reduce apprehensions. Consumers take supplements for a variety of reasons, such as weight gain, weight loss, improved exercise performance, increased energy etc. (Khoury & Antoine-Jonville, 2012). Therefore, the marketing communications must be designed to make specific information available to ensure that the target group of consumers is able to distinctly identify the reasons and benefits of using each of the several categories of fitness supplements available in the market. From a marketers' perspective, it is necessary to segment consumers on the basis of the choice strategy employed to select a particular supplement which may vary depending on the specific benefits being sought from supplement consumption. Furthermore, fitness supplements are designed to supplement the diet and in no way compensate for poor dietary choice. Instead of exaggerating the health benefits of supplements, complementarity between supplements and a healthy diet must be emphasized. It is extremely essential to disseminate accurate, scientific and reasonable information on appropriate use, potential benefits and possible side effects of consuming fitness supplements. Policymakers should thus carefully consider consumers' complementary consumption trends.

Additionally, for those who wish to take gym supplements, the choice of supplement is influenced by their reference group, which includes friends, family and experts. Therefore, marketers must direct their efforts to provide comprehensive knowledge about supplement use through the combined expertise of health professionals, including dietitians, doctors, and nutritionists, and that of gym instructors, trainers, and coaches, as they may positively influence benefit perceptions surrounding supplement use to ensure that fitness enthusiasts have the necessary information to make healthy and safe decisions. This is especially important as a marketing implication for analyzing consumer decision-making process when dealing with products that involve high perceived risk. More recently, the Chinese government initiated a nation-wide fit China movement encouraging people to indulge in various sports and physical activities for good health and fitness. Marketers may partner with the government to launch fitness campaigns promoting the use of supplements as an add-on to healthy diets. Such a strategy not only has the potential to raise public awareness of the benefits of the use of supplements, but also will help remove several inhibitions associated with their adverse effects on health.

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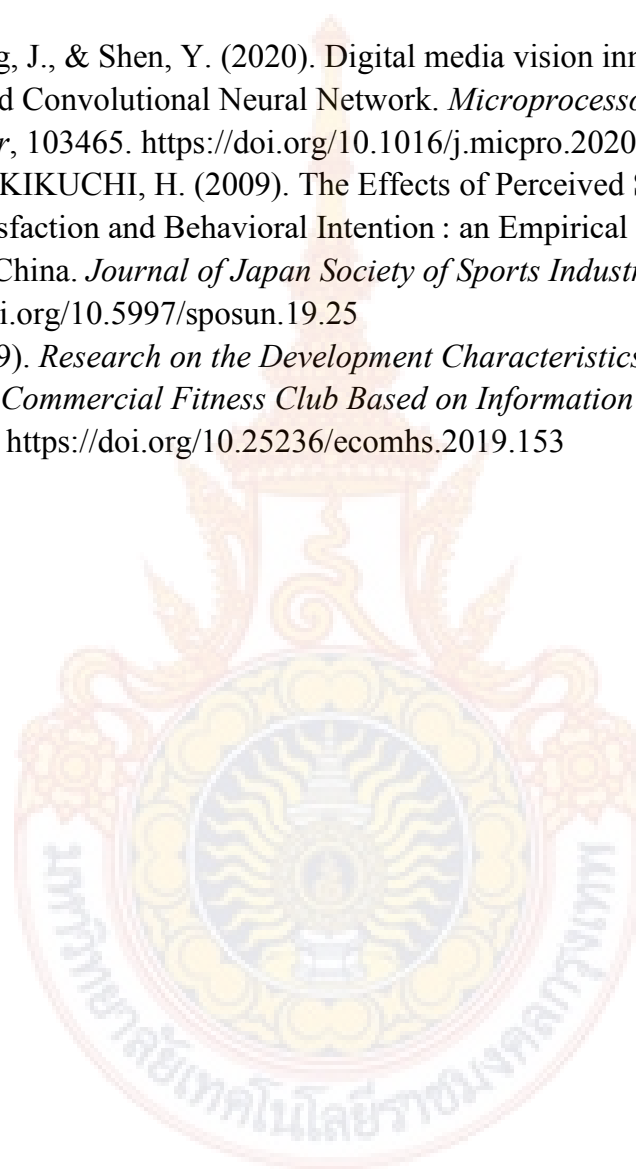
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## APPENDICES

### Appendix 1: Questionnaire's Cover Page

Hello! I am a postgraduate student of Rajamangala University of Technology Krungthep. I would like to know some information about your fitness club. Please take about 10 minutes to fill in this form. Your true and accurate answers are very important to our research. You only need to fill in according to your actual situation and your ideas. This information is for academic research only and will not adversely affect you in any way. Hope to get your strong support and help! Thank you very much!

**Part A:** Closed answer questions about the demographic characteristics of the participants, including gender, and income.

1. Frequency of visiting gym

- ☐ Never
- ☐ < 3times/week
- ☐ 3–5 times/week
- ☐ >5 times/week

**If your choice is ☐ Never, please return the questionnaire to the researcher and thank you for your participation. If you choose other options, please continue to complete the follow-up questionnaire.**

2. Your gender:

- ☐ male
- ☐ female

3. Your age is over

- ☐ < 20
- ☐ 20-35
- ☐ 36-50
- ☐ > 50

4. Your income (monthly)

- ☐ Less than 3000 RMB
- ☐ 3001-6000 RMB
- ☐ 6001-9000 RMB
- ☐ More than 9001 RMB

5. Your occupation:

- ☐ Athlete/Runner

- ☐ Student
- ☐ Working
- ☐ Professional Bodybuilder

6. Your Gym supplement use situation

- ☐ User
- ☐ Non-user

**Part B:** Closed-ended answer questions about 5 factors that influence purchase intention, including:

Please write a '√' in the box to show you agree or disagree with the following statements  
 1 = strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5 = strongly agree.

Variables	1	2	3	4	5
<b>Health Consciousness</b>					
I think about my health a lot.					
I am conscious about my health.					
I usually focus on my inner feelings of health.					
I am constantly examining my health.					
I am alert to changes in my health.					
I am usually aware of my health.					
I am aware of the state of my health as I go through the day.					
I notice how I feel physically as I go through the day.					
I am very involved with my health.					
<b>Attitude</b>					
I think the money spent on gym supplements is worthwhile.					
It is important to take gym supplements.					

It is valuable to take gym supplements.					
It is useful to take gym supplements.					
<b>Perceived Health Risk</b>					
I am worried that consumption of gym supplements would cause side effects.					
I am worried that taking fitness supplements can cause health problems.					
I am worried that consumption of gym supplements may cause potential risk to my health.					
Overall, I think that taking gym supplements would be risky for health.					
<b>Intention to Purchase</b>					
I intend to take Gym Supplements.					
I want to purchase Gym Supplements.					
I will try to take gym supplements from now on (if I am not already taking them).					
It is likely that I will take gym supplements (if I am not already taking them).					
<b>Perceived Health Benefits</b>					
I believe I would feel better, health wise, if I consume gym supplements.					
Regular consumption of gym supplements would help to build good health.					
Consumption of gym supplements also improves the way the body feels and looks.					
Regular consumption of gym supplements cuts down chances of poor health.					
Consumption of gym supplement would make me feel good about myself.					
Overall, I think that taking gym supplements would be beneficial for health.					

<b>Social Influence</b>					
I would rarely engage in consuming a gym supplement until I am sure that an expert approves of it.					
It is important that others (friends/family/experts) agree with my choice of gym supplement (before I act).					
If I were to use gym supplements, I would choose those gym supplements that I think others will approve of.					
I would achieve a sense of belonging by making the same gym supplement choices as others.					
If I want to be like someone, I would try to make the same gym supplement choices as others.					
I will be able to identify with other people by making the same gym supplement choices as others.					
If I have little experience with a gym supplement, I would try to find out about it from experts or other sources.					
I would consult other people to help choose the best gym supplement alternative available.					
I would frequently gather information from different sources before I start using a gym supplement.					





## BIOGRAPHY

NAME	ZHUANGZHUANG XIONG
ACADEMIC BACKGROUND	In 2019, He Obtained a Bachelor's Degree in Art from Capital Institute of Physical Education
EXPERIENCES	Served as aerobics instructor position in Anqing City, Anhui Province, Miracle Education Co., Ltd. in 2020 Served as a coach at the Meishibao Aerobics Training Institute in Anhui Province from 2018 to 2019 Assistant referee in the 2017 Beijing Cheerleading Championships, also won the national championship of competitive aerobics this year, and the title of national master class athlete

