

# Influence of Complex E-commerce Network Setting on National Sports in China

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## Abstract

Sports is promoted in China through e-commerce applications in all age groups, particularly among the retired and people with disability. E-commerce thus plays the educational role in developing awareness about sports. Physical fitness is also promoted through such e-commerce activities and makes a significant educational effect on the whole society. Physical health programs have become an integral part of public awareness education making them a common habit. However, China still lacks relevant theoretical research, especially in e-commerce systems based on complex networks. This paper analyzed e-commerce network settings and complex system frameworks based on the complexity networks. In the light of these analyses, national sports' status quo was summarized, and the significance of developing national sports was emphasized. The study used literature survey, comparative research, questionnaire survey, mathematical statistics, and logic analysis methods, and used several types of classifications of the sample of the study, namely the retired workers, the disabled, and the underdeveloped regions in the Northwest China. According to statistics, the results show that the establishment of e-commerce outlets based on complex networks had a positive effect on retired employees' as it increased their awareness and participation in sports. E-commerce, in spite of all its complexities, has thus provided a convenient online fitness platform for retired employees, disabled people and people the backward regions. Simultaneously, various the e-commerce websites and mobile Apps have also played an active role to promote sports activities among these sections of the society. The study concluded that e-commerce network setting based on complexity networks could promote sports in China and ultimately affect the people's health and fitness.

**Keywords:** E-commerce; e-commerce networks; national sports; obstacles to sports development

In the era of multimedia competition in the booming communication technology (Matthew Witry, 2018), (Ivan Cherez Ojeda, 2018) (Marlies Welbie, 2018), e-commerce has attracted more and more listeners with its audio-visual advantages and colossal communication network. With the rapid development of e-commerce media, the classification and division of e-commerce programs have become more detailed and specialized (Mahdi Choshin, 2017; Chenrai & Jitmahantakul, 2019). The sociologist Wright is one of the four pioneers of communication research. He summarizes the four leading roles of communication activities in external functions: environmental monitoring, social coordination, cultural heritage, and entertainment. The entertainment domain includes all games and sports activities. Sports e-commerce is gradually forming its own characteristics and unique charm. (Dong Wang, 2018) The development of sports e-commerce has slowly become a fuzzy and passive consciousness. Initially, sports e-commerce was only a category of sports news in the general concept of people. The most attractive is now the broadcast of sports events, which is still a vital e-commerce entertainment function of today's sports e-commerce (Adam Zeck, 2017). The existence and development of sports e-commerce are inseparable from the environment suitable for its development, and it is inseparable from China's national sports conditions.

China is currently witnessing transformation in sports, from the "gold medal sports" under the federal system to "national fitness" programs. Improving people's health and paying

attention to the quality of life are essential quantitative indicators for people's livelihood in China's sustainable development. The relevant departments are promoting the national fitness campaign and have formed a good atmosphere throughout the country. National fitness is the fundamental national policy of China and the primary trend of the future development of Chinese sports. Under the conditions of the market economy, sports e-commerce entertainment programs cannot ignore the entertainment era's direction and cannot ignore the psychology of ordinary audiences. While respecting the psychology of the audience and complying with the law of the times, we must also guide social progress and demonstrate society's positive energy. This is also the social responsibility of the media.

As one of the essential tools in mass communication, e-commerce is inevitable for any domain. The emergence of e-commerce as a tool for mass communication provides the best vehicle for the all disciplines, including sports. It can be seen that e-commerce initially grew as a people-oriented attribute. Its growth coincides with society's modernization and improvement in people's life and entertainment media. E-commerce products (J., 2017) are also seen as cultural products that can only achieve long-term development if they are rooted in their cultural attributes. The social benefit principle of sports e-commerce entertainment program development is intangible and even more non-quantifiable. However, e-commerce needs to be guided and strengthened. In the Chinese context, e-commerce is getting more and more

attention from all directions. The e-commerce network is an open and complex giant system (Lina Wang, 2017) (Dengfeng Li, 2017; Meyer & Keyser, 2019; Nel, 2019; Garcia-Rubio et al., 2019). It is like the Internet, the scientist cooperation network, and the actor cooperation network, reflecting social networks' characteristics. Previously, the collection of data for real social networks was mainly through surveying statistics (Y. Wang, 2019; Celik, 2019; Mugwenhi et al., 2019; Merye, 2019;). This method had large errors and worked on a small data scale, and was primarily limited to geography, privacy, subjective factors, and credibility. In recent years, with the rapid development of technology (Xie X, 2018; Seyran & Craig, 2018; Loyrinic, 2018; Firmenich, 2019; Kim et al., 2019), the Internet has penetrated all aspects of human life and production.

The principles of the development of sports e-commerce entertainment projects in China include avoiding the goal of losing media ethics to obtain direct economic benefits, creating bad gimmicks and selling points to achieve fame and fortune, and guiding and promoting social positive energy. Moreover, in the planning of the Chinese sports and entertainment, e-commerce is consistent with China's sports conditions at the national level. In today's vigorous promotion of national fitness campaign, it is mandatory to build a national physique and health. People are increasingly getting health conscious and awakened about fitness. The national fitness has undoubtedly had the critical impact on society and the whole population. For the sports entertainment program, it is therefore naturally impossible to ignore it. In the process of exploration and innovation, it is increasingly evident that e-commerce will continue to promote the whole nation's fitness. In order to implement the program's overall plan, China has been able to grasp the spirit of the times from a macro perspective. It conforms to the trend of the times, holds the big pattern, and stands tall. The programs planned on this basis represent the spirit of the times as well as the types of entertainment, including sports. Under the guidance of the 18th National Congress's vision, the Chinese sports ministry has devised several essential propositions for future regarding national fitness. This is the primary purpose of today's sports and entertainment e-commerce planning in China.

China is striving to make sports well integrated as entertainment media. It is trying to devise a comprehensive procedure in order to understand and interpret the nature of sports. This procedure can neither be too linked with the "backbone" nor deeply immersed in the body. The ultimate goal of entertainment is to make the sports elements colorful and lively. Once the entertainment is overly literary, the nature of sports will naturally disappear. This study examines the development of sports under the setting of an e-commerce network based on the complexity network as the research subject and studies the influence of e-commerce on national sports network. This study utilizes the literature method, comparative research method, questionnaire survey method, mathematical statistics method, and logic analysis to analyze the awareness of different types of people and what physical

fitness programs they are involved in, and finally how e-commerce outlets help them to comprehend sports communication. E-commerce and sports are mutually reinforcing, which will significantly improve future national fitness and enhance people's quality of physical health.

## E-commerce network points

### E-commerce network point setup analysis

The viability of e-commerce outlets (Cui J S, 2017) (Bahbouhi J E, 2017) (Hong Jun Huang, 2019) depends on the ability of the underlying system to provide timely and reliable service. It is necessary to have a reliable understanding of the workload of an e-commerce site to study its performance. E-commerce has become the engine of economic growth in the new century and will significantly impact economic development. Faced with the wave of e-commerce development in the world, many Chinese companies have also established e-commerce outlets to build e-commerce platforms. These companies are facing several theoretical and practical issues related to development of e-commerce in China, including trying to overcome constraints on its development. It is important to address to these problems and take corresponding countermeasures so that e-commerce develops healthily and rapidly in China. This will make the construction of e-commerce outlets smooth. E-commerce outlets cover three significant characteristics, namely, diversity, relevance, and integrity. The specific description is as follows:

(1) Diversity of e-commerce outlets: In an e-commerce system, business activities involve multiple components, including suppliers, consumers, network platforms, certification management, payment centers, logistics centers, and governments.

(2) Correlation of e-commerce network point setting: The components set by e-commerce network points are independent and related. They generate complex nonlinear effects through the flow of matter, energy, and information, and then interact with each other. There might be some dependence and mutual restraint which could be resolved mutually. For example, e-commerce activities include suppliers, consumers, network platforms, certification management, payment centers, certification management, logistics centers, governments, etc. through which flow information, business, capital, logistics, personnel, service, and all other interconnected roles. It is important to establish a correlation of these networks to avoid any constraints.

(3) Integrity of e-commerce outlets: The internal components of e-commerce stores are interdependent and mutually constrained. These components include behaviors, features, functions, purposes, opportunities, difficulties, and overall solutions to problems not covered by individual components. For example, the interaction of these seven components, interdependence, and mutual restraint create electronic trading activities that cannot be completed by any

single one. Without one of these ingredients, the "cask effect" occurs resulting in the failure of the entire system.

**E-commerce complex system framework based on complexity network**

There are two different types of nodes (J. Fu, 2017) in e-commerce network namely customers (called nodes) and commodities (called projects). When there is a relationship between purchasing a project and a node, it is called cooperative relationship. Two people are thus connected by a line to form an edge. In addition, all tasks and nodes constitute a subordinate network which might often be complex (Xu X K, 2018). Such complex network degrees (Chen X, 2018) (Severo Vazquez- Prieto, 2017) are indicators that measure the number of neighbor nodes associated with a node. The degree directly reflects the number of edges of the node.

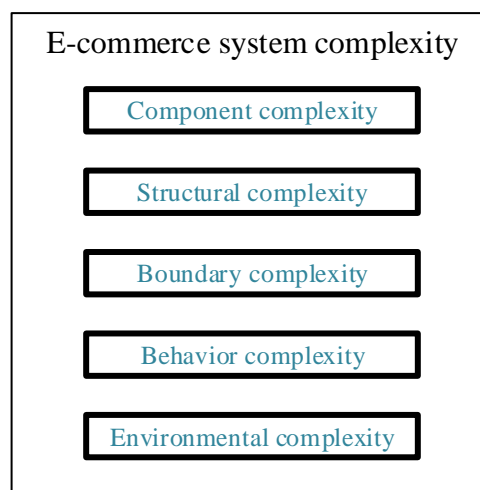
To understand the internal structure of this complex network, a large-scale system is required. The complex system of e-commerce can be divided into three subsystems: transaction, service, and regulation. These three subsystems have their individual structures. The transaction subsystem is divided into subsystems like suppliers, consumers, network platforms, and so on. The service subsystem is divided into subsystems like certification management, payment center, and logistics center. The regulation subsystem is a government subsystem that is sub-divided into supervision, promotion, legal applications, governance and compliance and to oversee and monitor the e-commerce activities.

The external environment of an e-commerce complex system is divided into seven environments: economic climate, policy environment, industrial environment, human environment, technology environment, economic

environment, and credit environment. E-commerce complex systems (Shekhar Shukla, 2018)(Pengpeng Zhao, 2017) cannot operate independently from the environment. Although each environment component's relationship is weak, it is inseparable from all subsystems. The background and dynamic changes affect the structure, behavior, and predictability of all subsystems. The interaction between subsystems in an e-commerce complex system and the external environment follows the stimulus to adjust its structure. This helps in adapting to the ground according to the dynamic changes of external environmental factors. The atmosphere of e-commerce complex systems has the characteristics of component complexity and functional diversity.

**The source of complexity in networks in e-commerce systems**

The e-commerce system is an organic whole formed by a particular mode of interaction, dependence, and restriction between the three subsystems of transaction, service, and regulation. Each subsystem contains multiple components, which are also systematically characterized, so in this study we divide them into secondary subsystems. The first task to explore the connotation of network complex systems in e-commerce (Anam Fatima, 2017) is to examine the source of complexity of e-commerce systems. After repeated analysis of the complexity of e-commerce network system, the main complexity of e-commerce network system is subdivided into five complexities, namely component complexity, structural complexity, boundary complexity, behavioral complexity, and environmental complexity, as shown in Figure 1.



**Figure .1** E-commerce system complexity

Component complexity: The component complexity of an e-commerce network system is mainly reflected in two aspects. First, it interacts with its several parts such as suppliers, consumers, trading platforms, certification management, payment centers, logistics centers, and government, which reveals that the system has diverse components; second, the composition, elements, function,

purpose and internal structure of each of these components members are different, which results in differences between the components of the system.

1. Structural complexity: Structural complexity is one of the sources of network system complexity in e-commerce. There are two reasons: First, the interaction between each subsystem and its respective external environment forms a flow of matter,

information, and energy, resulting in a structure that needs to be frequently updated. Second, the internal structure of the e-commerce system is hierarchical. Each e-commerce system has different hierarchies with different perspectives. Each has three first-level subsystems: the transaction, the service, and the control subsystems, that further rise to a new level to design secondary sub-sub-systems.

2. **Boundary complexity:** Each subsystem in the e-commerce system generates a market environment inside its design in order to support the environment outside the system through an interaction process. Each e-commerce system model determines its boundary to study its development. The boundary between the internal and external environment is the boundary of each e-commerce system. The boundaries sometimes exist and disappear from time to time, which complicates the establishment of boundaries. The geographical scope and size measurement of the e-commerce system itself is also often highly ambiguous and dynamic. Sometimes, the e-commerce system experiences turbulence in its evolution. It is also often problematic to determine the boundaries of an e-commerce system which turns out to be a source of system's complexity. For example, factors like government, logistics, and information stations have their respective external environment in the e-commerce system. However, with the rapid development of e-commerce, the external environment of the government factor gets engrossed with commercial activities. The role of consumers is traded, while logistics is a direct participant in trade activities, and some online platforms have developed their own technology. These all reflect the dynamics, ambiguity, and complexity of system boundary establishment.
3. **Behavioral complexity:** The components in a network system of e-commerce are like living individuals. If a change occurs in their supportive environment, it stimulates the whole system. These individuals are forced to react and interact with the environment according to the change. In this process, certain problematic dynamic behaviors such as self-organization, learning, self-adaptation, and emergence will appear. This will result in a change in their structure, function, and characteristics, and eventually affect the system's evolution process. For example, initially e-commerce payment model used to be directly carried out through online banking. There were many issues of confidentiality in the model. Consumers often did not receive the goods even after payment. At this stage, a new individual appeared in the e-commerce complex system—the payment center. This change reflects self-organization, self-adaptation, and evolution of the

system. The complexity of an e-commerce system is thus also characterized by its behavior.

4. **Environmental Complexity:** The external environmental factors that interact with e-commerce systems are diverse, including economics, policy, industry, humanities, credit, finance, technology, and other factors. The interaction between the system and these factors is a complicated relationship of nonlinearity.

In general, it is evident that e-commerce network system is complex. Its complexity comes from the complexity of its components. These complex components include its structure, fuzzy establishment of its boundaries, the complexity of behavior, and the environment complexity, and so on.

## **The status quo and significance of national sports**

### **The status quo of national sports**

The current situation of the national sports (Rademeyer., 2017) is mainly analyzed from the following four aspects: urban retired workers, disabled people, underdeveloped areas in the Northwest China, and people's awareness of physical fitness.

**Retired employees:** China's retired workers have the right attitude for sports; they, have a clear understanding, and a high willingness to participate in sports activities. The sports population of retired workers is significantly lower than the national sports population, and sports behavior is seriously lacking. The contrast between Chinese retired workers' sports attitudes and sports behaviors is vivid and pronounced. The current research focuses on macro and strategic findings of previous research. It becomes evident that most of the present, retired sports employees have already participated in some minor activities, such as square dance, park fitness, etc. It is also evident that, especially in the city, retired workers are more concerned about their healthy life. In rural areas, however, people generally do not pay attention to their health because of the absence of adequate information.

**Persons with disabilities:** The statistical results of the disabled people surveyed show that people with disabilities who participate in sports activities have their disabilities mainly from physical reasons. There are also significant differences in their income levels, cultural structure, and labor types. They are often given the title of not exercising, which also dramatically affects disabled people's enthusiasm to participate in sports activities. Simultaneously, the lack of sports facilities for the disabled and their self-closure also leads to non-participation of people with disabilities in sports activities. National Fitness programs though announce physical fitness activities for the disabled people, to improve their physical practice level and encourage them to participate in social activities on an equal footing. It also cultivates interest for sports among the disabled people. However, over the years, the research on sports for the disabled in China has

concentrated more on the competitive sports for the disabled. There has been little research on the development of sports for the disabled. Therefore, it is vital to promote the development of sports for the disabled.

Underdeveloped areas in the Northwest: The northwest region lags far behind the eastern and the central areas in various fields such as economy and education for multiple reasons. It is however committed to building socialism in the great historical process of building a harmonious society in China. Recently, due to vigorous development of sports and active participation in sports activities, the regional gap is gradually narrowing. A few development policies in the northwest part have also promoted the development of national fitness activities, providing good development opportunities for the Northwest rural fitness sports. Such an improvement and development process has practical and strategic significance. This will also break the unbalanced and uncoordinated development of e-commerce in this region. Therefore, it will be quite viable to carry out full investigation and research, in-depth theoretical discussions, and draw experiences from social sports and mass sports development to put forward a development strategy of rural fitness for the northwest region.

People's awareness of physical fitness: China's competitive sports have made significant progress in the past 40 years of reform and growth. China has won the highest gold medals in national and international competitions and earned excellent international reputation. In sharp contrast, during the past 20 years, China's emphasis on mass sports has not increased much, nor has the national fitness campaign been carried out enough. The young people's physical fitness continues to decline. In terms of improving citizens' physical fitness, the national fitness exercise is an essential part, but it is proving a weak link. With the increasing popularity of e-commerce, people's lives are now more and more convenient. People have the access to health information more comfortably. Everyone's health awareness has increased, but there are still a few defects, especially in rural areas where

conditions are very prominent. Due to the incomplete and adequate construction of rural sports facilities, the traditional ideology of the elderly is also missing. There are also few standards and definitions for healthy living. Therefore, it is imperative to develop people's awareness about physical fitness related to sports.

### The significance of national sports

China's sports industry's strategic direction is supported by the "Olympic Glory Strategy" and the "National Fitness Strategy." This means that China's sports industry is not only directed to "fierce competition" and "winning gold medals," but also it requires people to include sports in their daily life, and to use sports as an essential means to improve the quality of life and optimize the living experience. In the historical context, too, China's complete construction of a well-off society depended on mass sports and national fitness programs. It has been the main content and an indispensable part of China's sports policy to carry out the goal of realizing the National Fitness Program and build a well-off society. It was also the primary social responsibility of each organization to carry out national fitness programs. With the rapid development of modern science and technology and the economy levels, health demand has gradually become one of the essential elements of people's development needs. Physical health has become a necessary means of quality and lifestyle optimization. Simultaneously, more and more countries recognize the importance of improving the people's physical health and improving the overall quality of their people's fitness. They actively take various measures to vigorously promote and develop mass sports, thereby enabling the further development of national sports. Therefore, in the contemporary Chinese society, the development of mass sports has become a symbol of prosperity and civilization of a country and country.

### Analysis of the Influence of E-commerce Network Setting Based on Complexity Network of National Sports

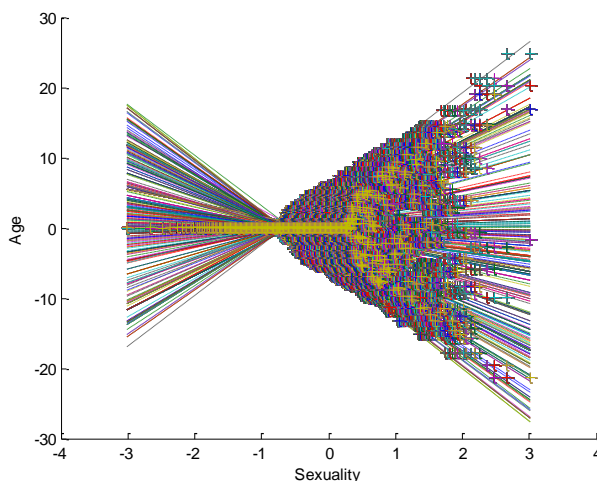


Figure. 2 Survey population age, gender scatter plot

In this study, the respondents' age and gender were counted before statistics as shown in Figure 2. The horizontal axis

indicates gender with positive value indicating male, and the negative value indicating female. The vertical axis indicates

age, with age averaged at 35 years, and the extension direction shows different ages. It can be seen from the above data that the population is more male than female, and the age group is evenly distributed, which is consistent with the statistical distribution regulations. At the same time, this data has a strong universality.

### The Influence of E-commerce Network Setting Based on Complexity Network on the Participation of Urban Retired Workers in Sports

**Table 1**

*Degree of the willingness of retired employees to exercise*

Very willing	Willing	Not deserve the name	I don't want to.	Can't
18.5%	51.3%	10.3%	13.8%	6.1%

The data in Table 1 reveals that most of the retired employees are willing to receive physical exercises, which is due to the development of awareness about fitness programs and access to exercise products and information through e-commerce applications.

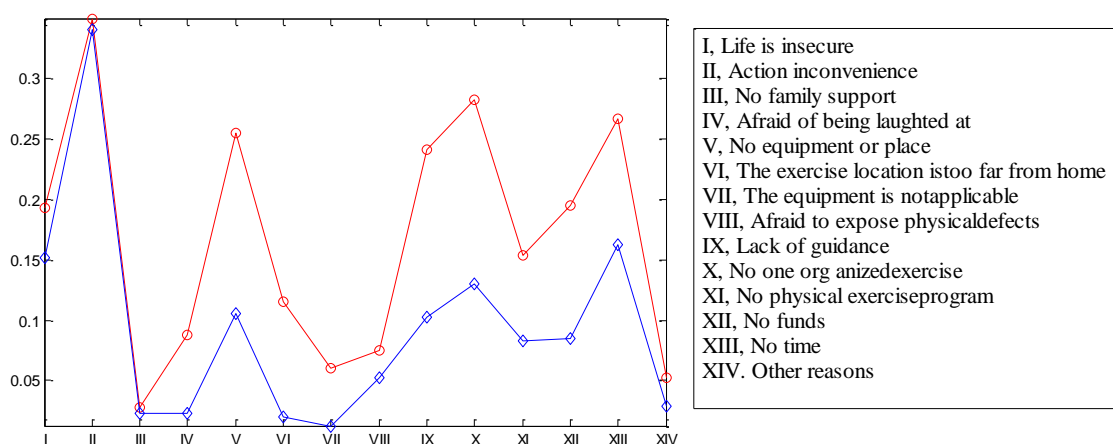
### The Influence of E-commerce Network Setting Based on Complexity Network on the Participation of Disabled Persons in Sports

The main factors limiting the participation of persons with disabilities in national fitness include personal and social conditions of persons with disabilities. Individual factors include economic, physiological, and psychological factors. Their participation in national fitness is also closely related to society's support and assistance for their wellness. There is lack of facilities suitable for people with disabilities, lack of special equipment ideal for disabled people; Lack of backbone to organize physical exercise; Lack of counseling books and exceptional guidance, counseling agencies, etc. This will limit

With the opularity of e-commerce, various health websites and fitness apps are seen all over. These resources allow retired workers to have enough learning opportunities and to participate in sports activities. The current elderly people's sports penetration rate is getting higher and higher, especially in the square dance. This may be due to the attraction of the Internet or the public's appeal. This study is investigating the critical role of e-commerce based on complex networks in promoting sports health knowledge. It is also exploring retired employees' fitness pathways. Hence, it is found that the degree of willingness of retired employees to exercise is measurable and can be shown statistically (Table 1).

the activities of people with disabilities who often do not even participate in fitness.

Table 2 lists the main factors affecting the participation of persons with disabilities in national fitness. Among the disabled people surveyed, financial issues are consider 15.4 actors limiting their participation in national fitness activities. They believe that basic life is not guaranteed and does not expect to participate in physical exercise. Second, they think that their physiological factors are 35% of those restricted from participating in national fitness activities. They are afraid of exercising in public places percentage is 8.8% Because their physical defects are the laughing stock of others. Also, some disabled people are more superficial in participating in national fitness activities. They do not have a clear concept of fitness and labor, and they are also the main factors limiting the participation of disabled people in national fitness activities.



**Figure. 3** Comparison of e-commerce network settings based on complexity network before and after

Figure 3 illustrates that no matter the e-commerce network setting is based on network complexity; the inconvenience of movement is still the main reason that hinders the disabled from going out. This is contrary to the fact because simultaneously there are several new opportunities to change

people's ideological concepts, and their acceptance and tolerance of disabled people. For instance, the rapid development in society, in fitness infrastructure and in fitness textbooks have changed people's attitude. Due to e-commerce applications, people can choose appropriate method to

exercise. Various fitness websites and apps under e-commerce are also accessible taking people's pursuit of health to their hearts. E-commerce applications are the main factor in reducing the obstacles to fitness for the disabled. Simultaneously, e-commerce based on complex networks can

bring better rehabilitation training and daily life training to different types of disabled people. For this, e-commerce should be more comprehensively applied in the development of the sports for the disabled.

**Table 2**

*Main factors affecting the participation of disabled people in national fitness*

Factors influencing the disabled to participate in the national fitness activities	Percent
Life is insecure	19.3%
Action inconvenience	35.0%
No family support	2.8%
Afraid of being laughed at	8.8%
No equipment or place	25.5%
The exercise location is too far from home	11.5%
The equipment is not applicable	6.0%
Afraid to expose physical defects	7.5%
Lack of guidance	24.1%
No one organized exercise	28.3%
No physical exercise program	15.4%
No funds	19.5%
No time	26.7%
Other reasons	5.2%

**The Influence of E-commerce Network Setting Based on Complexity Network on Participation in Sports in Underdeveloped Areas in Northwest China**

Since ancient times, the Northwest has been a multi-ethnic region. Due to different ecological environments, production methods, and other historical factors, the Northwest region has been one of China's many ethnic minority areas. Therefore, the Northwest Territories have become a historical

arena for collecting and integrating races and forming and developing various national cultures. Several ethnic movements and unique ethnic dances and folk songs such as stone locks, egg beats, playing wooden balls, yellow river competitions, horse racing, drawbars, wrestling have come into being, showing the diversity of the region and national sports culture.

**Table 3**

*Reasons and plans for rural people in Northwest China not to participate in fitness*

Category	Content	Amount	Percent (%)
Reasons for not participating (multiple choice)	No interest	142	24.65
	No time	272	47.22
	Labor can be an alternative	209	36.28
	No venue facilities	101	17.53
	don't know how to exercise	88	15.28
	Insufficient economic strength	210	36.81
	No need to exercise	84	14.58
	Other reasons	62	10.76
	Decide to take participate	101	17.54
Plans	Decide not to participate	142	24.65
	Uncertain	333	57.81

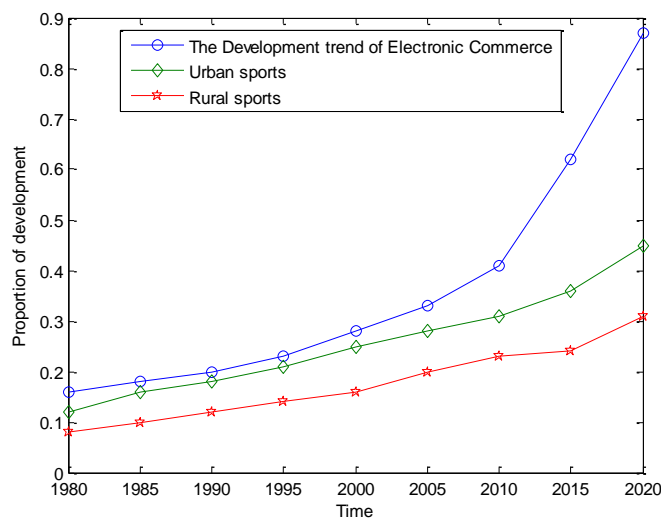
Table 3 reveals the data stating the reasons for not participating in sports in the northwest region. These reasons include lack of time accounting for 47.22%; insufficient economic strength and educational rate of alternative labor accounting for 36.81% and 36.28%, respectively. In future,

people planning to participate in sports are only 17.54%; which shows 82.46% of people are still not sure whether to participate. These data altogether indicate that the people in the northwest region lack the desire to participate in sports. Actual participation in sports is not optimistic, economic

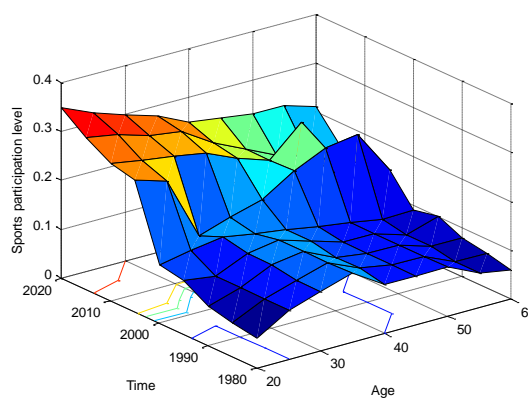
strength is insufficient, and there is no time to participate. The quality of life in the Northwest is not high, and the demand for sports labor is still deficient.

This study also analyzed the impact of e-commerce network settings on complex networks on rural and urban sports in Northwest China. The data belonged to 1980 to 2020, including the data related to application of e-commerce in sports. Assuming that e-commerce and urban sports development's ultimate goal is 100%, we expressed different

percentages of products for different periods. The information on sports development for each period came from the implementation of sports in the same period. For example, sports performance for people aged 50 and 30 was counted when they were 20 years old. Finally, through statistics, the trend of urban and rural sports implementation in the northwest region and e-commerce development was measured and shown in Figure 4. In contrast, Figure 4 shows the role of e-commerce development overtime in sports development.



**Figure 4** The impact of rural and urban sports in the Northwest



**Figure 5** The level of sports popularization changes with the age and age of the surveyed people

As shown in Figure 4, e-commerce is increasingly used in various aspects, including the Application of sports. With the popularity of smart phones and application, people have the access to various fitness applications and fitness tutorials. Figure 4 shows the sports development in urban and rural areas in the northwest region in an increasing state, with a slow overall growth. The reason is that the climate during winter in the Northwest is freezing and not very suitable for outdoor activities. Moreover, the slow development of urban and rural cities also causes people not to pay attention to the importance of sports and health. Finally, the shackles of traditional ideas in different regions have also led to the slow development of sports in the Northwest. Figure 5 exemplifies the convenience brought by e-commerce and how it makes people of different ages to pay more attention to physical

exercise, which also shows that China is developing at a rapid pace.

### The Influence of E-commerce Network Setting Based on Complexity Network on Residents' Healthy Sports Consciousness

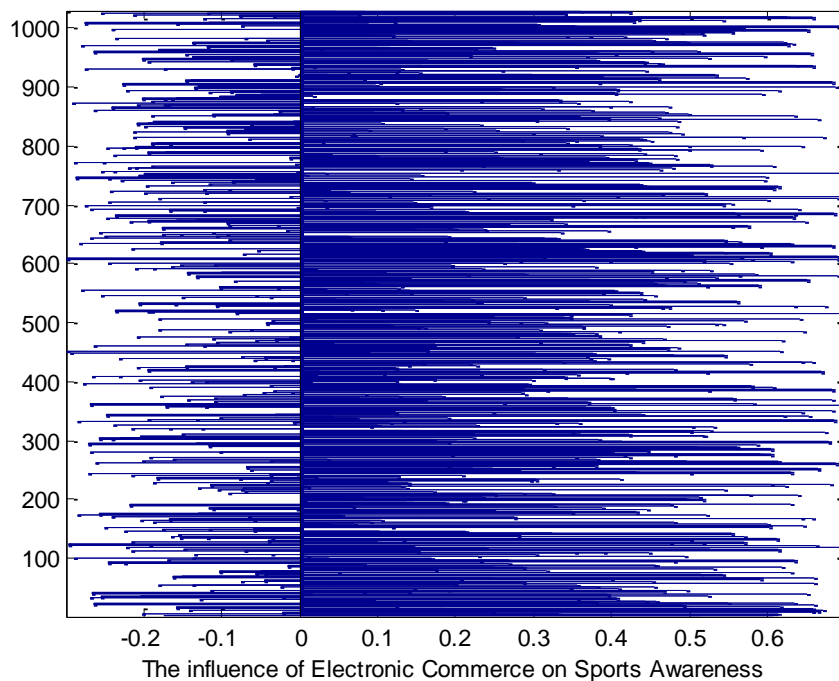
Physical fitness is conducive to conscious acceptance of public awareness education, making it a common habit among the society groups, disseminating education about health and fitness. At present, China still lacks relevant theoretical research. Studying public awareness on physical fitness activities has important practical significance for cultivating residents' self-consciousness of available facilities and a harmonious relationship between people. It has expanded educational methods to promote civil society.



The National Fitness Program is an ambitious system prepared with a strict, step by step implementation plan, highlighting the training of young people, and gradually increasing the participation of different sectors of society in sports. This program considers constraints such as the gap and the imbalance of sports development in other regions, uneven state of national fitness based on gender and age of population, and like. The Chinese socialist market economy system best fits the national fitness plan. It can help the national fitness to thrive on the basis of socialist modernization—socialization and industrialization. In China, the socialized and industrialized system of the whole people has formed a new combination of society and individuals. This national fitness pattern is developed into units, communities, and families that have gradually increased the consumption of sports time. In addition, the federal fitness program helps the people to adapt to social development and it is a good opportunity to promote

China's sports. Its promulgation and implementation mean that there is a Chinese sports boat. Only a new compass with high precision can make the course more accurate, ensuring that the Chinese sports ship is speedier and more stable in the 21st century, and enough power supply for the entire fleet is established.

The study performed a homogenous reliability test to accurately understand the questionnaire's reliability on the exercise behavior scale,  $\alpha=0.753$ . Three weeks later, the same questionnaire was investigated again for the reliability testing through surveys with sports investigators. The two reliability coefficients were calculated as  $R=0.89$ , which proved the reliability of the index system. A total of 1200 questionnaires were distributed, and 1,123 were recovered, with a recovery rate of 93%. Among them, 1030 were valid questionnaires with the effective rate as 92%. The valid 1030 questionnaires were judged, and the judgment results are shown in Figure 6.

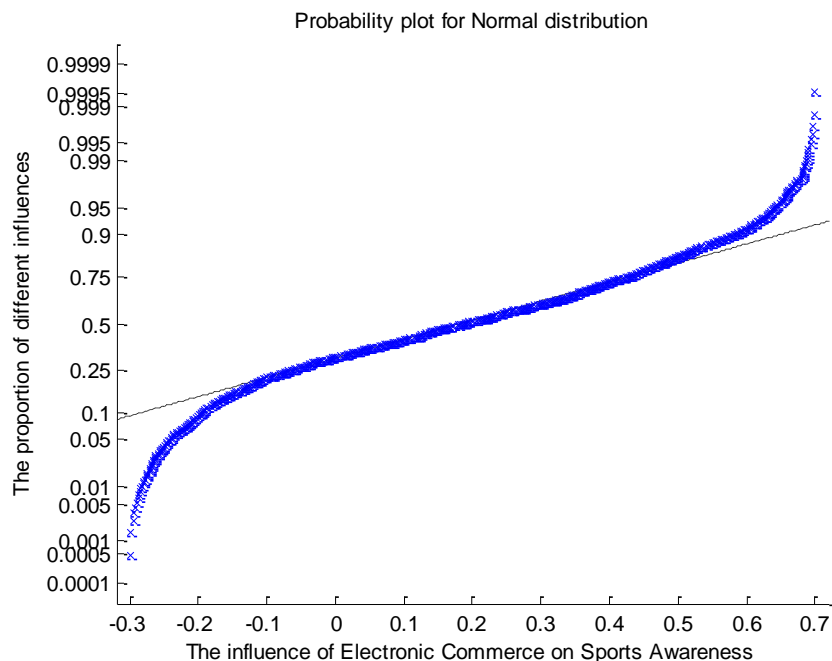


**Figure. 6** E-commerce promotes sports

The horizontal axis in Figure 6 shows values that represent how respondents contribute to e-commerce. Positive values indicate promotion, and negative values indicate weakening or retardation. Among the total respondents, 703 respondents believed that e-commerce enhanced public awareness of sports behavior. The proportion is 68.25%, and the balance that drains the attention of sports is 31.75%. The above data seems to be unreasonable because e-commerce has become very popular in people's lives. Finally, through questionnaire analysis, it is evident that e-commerce weakens sports awareness mainly among the elderly. The reason is that the

degree of cognition of e-commerce is very high and the elderly are unable to operate electronic devices to learn sports due to the limitation of knowledge level. It is important to eliminate such unfavorable factors to keep the pace with the rapid development of the technological society and strengthen e-commerce.

People's access to e-commerce applications has also played an active role in promoting awareness of sports. Figure 7 below analyzes the impact of e-commerce on the awareness of mass sports.



**Figure. 7** The impact of e-commerce on the awareness of mass sports

Figure 7 argues that there is an extreme situation when it seems that e-commerce network based on the complexity network is set to promote the reinforcement of residents' sports awareness. Figure 7 presents how the investigation is damaged and survey results get concentrated on surveyors in the high age group. These survey results prove that e-commerce network setting based on complexity network has a positive effect on sports awareness. At the end of the image, it can be seen that the e-commerce network based on the complexity network is distributed in low-age population, which proves that with the development of the times, the younger generation pays more and more attention to sports and sets off the national fitness. The upsurge is just around the corner.

## Conclusion

Although China's economy is still in the developing stage, its developing rate has surpassed that of most countries globally. This suggests a rapid evolution in the external environment of e-commerce. In the past two decades, the rapid development of China's information level has been much complicated, due to the use of relatively more complex e-commerce activities. The problems brought about by these complications have brought unprecedented development in the growth of e-commerce. Complex system theory believes that a system's ability to develop depends on its environmental adaptability, and the same is valid for e-commerce systems. It requires

people to change old management models to adapt to changes in the environment and develop more complex e-commerce systems. Various sports functions play a major role in promoting the all-round development of people, especially in the educational process of sports education. In school education, grades have a substantial educational effect on students and have a positive educational impact on their progress. In this research study, the e-commerce network system based on complex system framework structure in the light of national sports was analyzed. The study used literature review, comparative research, questionnaire survey, mathematical statistics, and logic analysis methods to collect the statistics on health sports awareness of retired workers and disabled people. The data was collected from the underdeveloped areas in the Northwest of China where e-commerce outlets have been established based on complex network systems. It is hoped that this study will promote awareness about the use of e-commerce in sports and fitness programs and ultimately affect the spread of sports health in China.

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