Proceedings of Business and Economic Studies

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Proceedings of Business and Economic Studies

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Research on the Rules of Short Video Online Reviews in Mainstream Media

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Funding: Research on media short videos' impact on public opinions (Project No.: 2018wtscx235)--A characteristic innovation project of colleges and universities in Guangdong province in 2018.

Abstract: With the continuous optimization of mobile intelligent mode, the internet has gradually entered the era of visualization. This paper briefly summarizes the reasons and current situation of the rapid development of mainstream media short films, analyzes the composition and functions of mainstream media short video online reviews, and probes into the rules of mainstream media short video online reviews.

Key words: Mainstream media; Short video; The rule of network comment; Research on the mode

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1 Introduction

In the era of integrated media, the mainstream media generally use newsreel (a new communication tool) to make news, which is different as traditional mainstream media, through the establishment of short video thinking, to cultivate the content field, strengthen the application of new technology, innovate the collection and editing process, and brings audience a better experience in the news short video, and also promotes the rapid and stable development. With the continuous optimization of mobile intelligent mode, internet has gradually entered the era of visualization. Big data technology is widely used in various fields. Through the analysis of users' interests and hobbies, the platform recommends short video content to users according to big data analysis. Tiktok is developing rapidly, and is similar to Kwai Yin, Micro Vision and Fast Hand. Dynamic data shows that overall times of short video users logging in reaches to 1.12 billion times in 2020. The development of short online video is essential for mainstream media and mainstream public opinion. At present, the impact of media account on short video platform is still in its infancy. Yu Yang[1] published relevant opinions on the platform (Economic Daily) to study how the media can improve the development status. Cao Tianjing[2] uses the citizen-centered realism comments by making short videos, and uses the cross media narrative method to form a comprehensive three-dimensional communication matrix. Speech and influence provide a model for the development of mainstream media news review in the all media era. Zeng Jing[3] elaborated the reasons for the traditional mainstream media to make short films and videos and the advantages of news short films in news communication, analyzed the problems existing in the production of short films and videos by traditional mainstream media, and put forward practical solutions.

2 Reason analysis and development status of short video platform's rapid development

2.1 Analysis of reasons of short video platform's rapid development

Recently, short video platform has rapidly developed various funds and resources to integrate into short video platform. In particular, mobile apps that use Douyin, Volvo video and Watermelon Video as industry leaders are amazing. There are scientific and technological reasons for its development. Although there are historical reasons, it also has its strong competitiveness. Short video is becoming more and more popular in the field of network, and plays an important role in the development of network technology. Internet content

is embedded in short video transmission. Usually, videos less than 5 minutes will be uploaded and inserted into new internet media. This shows that the short video platform is particularly important, which is inseparable from the development of network technology, especially the development of mobile network technology will bring greater development opportunities for the short video industry. In information age, pace of life is accelerated, pressure of life is increased, and time is scattered. In era of mobile internet, the scattered time is used for entertainment, which has become a living state of many people. In era of scattered entertainment, short video corresponds to the development trend of the times, while the era of fragmented entertainment corresponds to scattered entertainment. Information cocoon refers to the phenomenon that information field is used to guiding according to its own interests and constraining its life. With the development of information technology, especially the development of algorithm, the role of information cocoon is more and more obvious.

2.2 The current situation of mainstream media short film development

With the development of internet technology, we have basically realized that most people in China can have the access to the internet. The main groups of internet are after the generation after 90s and 00s. According to the latest data report, the average number of active users of short video per month has increased significantly. Driven by the strong demand and internet, the sense of social participation, identity and spiritual needs are more urgent. With the development of science and technology, imaging technology is sweeping the world, which is the core of the current media transformation. With the popularity of smart phones and the rapid development of mobile Internet, the short video market is growing rapidly, the video consumption rate is also increasing by year, and the broadcast volume of short video is also the most popular video among the internet public. B station and other platforms are rapidly popularized, and many medias and operators can play short videos. Content is usually short, but rich and diverse, covering all aspects of society, such as education-related, scientific, business and animation themes. Short video production takes a long time and has a wide audience. It also has a certain interest and humor, which is more conducive to communication and becomes the focus of people's attention. UP masters (video producers) with high quality output usually need an excellent operation team. There will be two new trends in the content development, knowledge and learning content. In the past two years, knowledge and learning content has been one of the fastest growing content on our platform. This year, tens of millions of learning videos have been added, and the number of viewers has expanded rapidly.

3 The components and functions of short video online reviews in mainstream media

3.1 Elements of online review

The generation of network users mainly consists of four parts: subject, object, information and media. Usually, the user theme is the producer, who has used or experienced the product and provided his own feedback. Therefore, the higher the volume and quality of the video, the higher the user's participation, and the more willing they are to leave their opinions, the more personal feelings and attitudes they have. Object refers to the products and services they like. The data information left by many users through comments is usually divided into structured and unstructured. For example, the amount of "like" and "reply" is structured information, while the text content, user ID and other characters are unstructured. Comment platforms and channels are often referred to as media. Communication tools includes following things, such as mobile phones and computers, and platform refers to the interactive platform for generating network communication.

3.2 Elements and functions of online review

There are usually two types of online comments: open and not open: Station B, video website platforms such as Mango and Watermellon, and e-commerce platforms such as Tmall all use open to online comments. Because public comments are usually more reliable, the audience can also use comments to know about the product, so as to help in-depth understanding of the product and leave a good reputation in the public. Unpublished online comments will not be published directly or in part. The main reason is to increase the number of registered users and the long-term usage of users as well as activity level of the platform by requiring registrations before obtaining the corresponding rights and search all contents. In our research, network users are required to interact and feedback information after receiving the service, and we know exactly how much information it contains and its impact. Therefore, we can use this new perspective to study some new patterns.

4 How to deal with online comments

4.1 Mining text

(1) Classification: including training and classification based on big data; (2) Cluster analysis: There is no need for supervision, it should be based on the specific features of the text. It mainly transforms the required text data into any required text data or information, and uses the corresponding format; (3) Storage: xls, txt, csv, word, etc.; (4) Auto summary: When we search for keywords, when we receive a lot of data, we don't need a lot of information, or we don't need data. We also have to identify and filter out useless information. It's really possible to summarize automatically. It creates the necessary information to avoid wasting information in the process; (5) Automatic question answering: Based on the user's questions, the computer server searches and answers the invalid answers; (6) Machine translation: It means that transforming one language into another, and then filtering out unnecessary or unsatisfied information; (7) Language recognition: The output language of computer is converted into text, which is easy to understand and be analyzed.

4.2 Text preprocessing

This link is mainly because the initial text we grab has many defects. We need to classify the text for subsequent data analysis. After getting the text, we need to start preprocessing the text, delete meaningless online comments, delete duplicate items, delete stop words and other parts. Links in text data duplication are mainly used for duplicate parts of text. No matter which type of data contains online annotations, they are all automatic annotations from the system. Some annotations may be generated by some unexpected repetition to save time. From a linguistic point of view, for many reasons (such as copy and paste), some refresh the screen, so the first display is usually the most valuable. Because different people have different opinions, the same comment is unlikely to be published. If there are two identical annotations, the annotations are different, but the content of the annotation remains unchanged, which is usually considered the result of the replica.

4.3 Split text

The continuous text is divided into independent words, main object, method and language processing problems of word segmentation. Text language segmentation method is particularly important.

4.4 Chinese word segmentation

Participle: This is also the habit of the Chinese people themselves. Chinese word segmentation is mainly completed by adding space symbols corresponding to words and phrases. The main problems and challenges of current academic research are as follows: Standardization of word division, identification of ambiguous phrases and unregistered phrases. Standard participle: There is no clear line between words. There is no final conclusion about the boundary of phrase group, but experts have made corresponding research on Chinese phrases, and found that the recognition rate of phrase group is low, which leads to the natural split of phrases, and subjective errors will lead to the difficulty of Word introduction and segmentation. There are three main ways to express Chinese ambiguous words. For example: (1) The domain meaning of conjunctions: It is mainly similar to the Chinese AB form. (2) For example, it can be divided into big ambiguity and big ambiguity. In this case, it's hard to define the right or wrong way to divide. We can exchange points according to context. (3) Mixed ambiguity: In the sentence, it mainly refers to the above two situations.

5 Conclusion

At present, the video platform is developing continuously, mainly by byte beating and fast Kwai. The main way of mainstream media short video is to supplement the original video platform with short video, make a large number of original short video, cooperate with internet companies, create a new short video platform, and supplement new short video on the original video platform. Tiktok is developing rapidly, and is similar to Kwai Yin, micro vision and fast hand. Dynamic data shows that short video users will sign in as many as 1.12 billion times in 2020. The development of short online video is essential for mainstream media and mainstream public opinion. At present, the impact of media account on short video platform is still in its infancy. This paper briefly summarizes the reasons and current situation of the rapid development of mainstream media short films, analyzes the composition and functions of mainstream media short video online reviews, and probes into the rules of mainstream media short video online reviews.

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Study on the Issue with Optimization of Enterprise Organization Management and the Solutions

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Abstract: After the introduction of "corporate governance" in China, the organization and management of enterprises have been comprehensively updated, and the multiple functions and values of enterprise organization and management have been recognized. This paper, with the enterprise organization and management optimization problems and solutions as the research topic, analyzes the connotation of organization management as well as the problems existing in the optimization of enterprise organization management, and puts forward some solutions.

Key words: Enterprise organization management; Optimization problem; Solutions

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With the application of corporate governance plan, Chinese enterprises have improved the level of organizational management in the aspects of governance structure, internal control and resource allocation. As the organization management emphasizes the cooperation of the participants, in the actual practice of organization management optimization, enterprises mainly adopt the power and responsibility mechanism to strengthen the effectiveness of organization management. It highlights the correspondence of the three elements of rights, responsibilities and interests in the organizational structure. From the perspective of application experience, the optimization of enterprise organization management mainly takes two paths, one is the overall direction of governance structure, the other is the special organization and management direction of optimal allocation of project resources.

1 Analysis of the connotation of organization management

Organization management is essentially a method to deal with the relationship between subject and object, which has both theoretical and practical technical characteristics.

In practical application, it mainly uses the organization as the intermediary to coordinate the relationship between the participants in the process of the interaction between the subject and the object, so as to produce synergistic effect. From the perspective of enterprise organization and management, by setting restrictions on positions and dealing with the relationship of "power responsibility profit", the total factor productivity of enterprises can be effectively improved.

2 Analysis on optimization of enterprise organization management

2.1 Optimization of organization management

The optimization of organization and management focuses on four aspects: The first is to clarify the content and subject of organizational work; The second is to solve the function orientation of the organization; The third is to deal with the "power responsibility benefit" relationship among the board of directors, professional managers, management and employees; The fourth is to resolve the problems in the construction of organizational team.

2.2 Enterprise organization optimization

The difficulties in the optimization of organization and management of domestic enterprises are reflected in the relationship of "power responsibility profit" and team building. The reasons are as follows. First of all, the power and responsibility mechanism is not introduced. As a result, the board of directors, professional managers, management and employees have a "non-equal relationship". Specifically, the first three have unlimited rights and unlimited responsibilities. The adverse consequences caused by enterprise management are borne by employees. As a result,

it leads to the problem of uneven distribution of enterprise interests and the problem that the role of incentive mechanism is not obvious. Secondly, team building is relatively backward. The enterprise has not developed and explored the team building of organization and management level, and lacks comprehensive understanding and effective application of recruiting, employing and retaining people through team building. For example, in the domestic human resource market, the supply of talents is greater than the demand of enterprises. The problem of brain drain frequently occurs in enterprises, and focuses on the reexamination link and the employment link, that is, due to the "emphasis on experts, light training"[1].

3 Solutions to optimize enterprise organization management

3.1 Precise positioning function

The scientific treatment of the relationship of "power responsibility benefit" is based on the function orientation. At present stage, the corporate governance structure is mainly composed of managers and employees, lack of intermediary organizations with coordination function. For example, after introducing the professional manager system, its function orientation remains to be responsible to the boss and the board of directors, which fails to play a better coordinating role through professional managers. Therefore, in terms of professional manager's responsibility, it should turned to be responsible to the enterprise, that is, to the organization, so as to indirectly realize the responsibility to all employees[2].

3.2 Introducing power and responsibility mechanism

The power responsibility mechanism is an effective means to deal with the relationship of "power responsibility benefit". On one hand, the overall application of the mechanism can make the enterprise take the development goal as the criterion, clarify the functions of each post, and clearly divide the responsibility subjects. On the other hand, with the help of organization management, enterprises can reasonably allocate various resources and improve the utilization rate of resources in specific projects. For example, the power and responsibility mechanism runs through all posts of the project, which is conducive to the realization of the goal of allocating resources according to functions, and urge the executives to complete the work efficiently within the limits of their respective functions and responsibilities.

3.3 Establishing a new welfare system

Team building at the level of enterprise organization management aims to solve the problem with talents. First of all, enterprises should put their own development and talent development in a synchronous state. In this way, talents can accept it as a kind of welfare according to the expectation of the future of the enterprise and personal career planning. Secondly, enterprises should distribute their interests reasonably through incentive mechanism. For example, establish welfare projects with he group interests, such as group tourism, group training. The clear promotion regulation, on-the-job training programs, and the matching talents training and promotion project with job changes are conducive to the rational distribution of enterprise interests.

3.4 Solving the problem of team building

With the background of multiple globalization, the essence of horizontal competition is the competition among enterprise talents. To solve the problem with team building, we need to expand the synergy of talent cooperation through organization management. On one hand, it is suggested to enhance the information sharing among various departments of the enterprise and reduce the internal information transaction cost by building information management platform. This method helps to weaken the mutual passive isolation problem caused by the excessive information transaction cost of team building. On the other hand, basing on the enterprise culture, the employees can build a team with the enterprise’s characteristic as the common character under the joint effect of enterprise collective psychological value and collective work style[3].

4 Conclusion

In a word, as a kind of management theory and technology, organization management has diversified characteristics in the actual enterprise management practice. Therefore, it is suggested that in the process of optimization, different angles should be selected as far as possible, and a more targeted organization management plan should be formulated in combination with the actual management thinking updating needs, human resource management needs, mechanism operation needs, etc. Especially in the new situation of the overall economic system construction, Chinese enterprises are faced with double competitive pressure. We should try our best to improve the allocation efficiency of various resources, resolve external risks and improve internal competitive advantages from the organizational management level.

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On the Interaction Between Media and Economic Development--Analysis based on the Principles of Western Economics

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Abstract: In the context of the era of big data, the cultural industry represented by media is developing rapidly and gradually becoming an important force to promote economic growth. Based on the relevant principles of Western economics, the article first analyzes how economic influence guides media activities from the perspective of media and audiences. Secondly, it explores how to promote economic and social development through media from the perspective of media's allocation of production factors, which provides a theoretical basis for scientifically understanding and understanding media economy.

Key words: Media economy; Resource allocation; Media industry

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1 Introduction

On June 21, the "9th Media Development Forum and 2018 Media Blue Book Release Conference" was held at Tsinghua University. At the meeting, the editor-in-chief of "Media Blue Book" and Professor Cui Baoguo of Tsinghua University pointed out that the digital economy is sweeping the world, with the rapid development of the Internet. With development, the structure and classification of the media industry have been overturned and reconstructed time and time again. With the deepening of the integration of the Internet and traditional media, the media industry has become an important part of China's digital economy. China's economy is progressing steadily. The continuous growth of Chinese consumer consumption and the steady increase in cultural media consumption have driven the continuous growth of the media industry. The current "media" is a comprehensive concept, including all kinds of media devices, as well as various forms of media or media organizations, as well as content production and data storage institutions. It is a comprehensive system. The media mainly monitors the social environment, coordinates social relations, inherits culture, and provides entertainment. As a representative of the cultural industry, the media industry has made significant contributions to promoting economic growth, creating wealth, increasing employment opportunities, and improving the country's soft power.

Different economic theories and analysis methods form the theoretical basis of media economics. Media economics mainly studies how economic and financial forces affect the media system and media organization, and its essence is the influence economy. Influence is the most valuable internal quality of the media, which enables the effective combination of economic and social benefits of the media. Based on the research of existing literature, the article raises two questions: First, how does economic influence guide media activities? Second, how does the media promote economic development? Based on previous research results, the above two issues are explored through the relevant principles of Western economics, so as to deepen people's understanding of the media economy, provide a useful reference for the development of the media economy, and enrich the content of my country's media theory.

2 The guiding role of the economy in media activities

2.1 The guiding role of the media

Media refers to the carrier of disseminating information and consulting information. Newspapers, magazines, radio and television are the traditional four major media. With the development of science and technology, new media, such as Internet media, have gradually emerged. As a producer of media content, media companies obtain profits by providing content to customers, packaging the content into intellectual property rights for external sales. Economic globalization has accelerated the development process of the information age. In the context of the era of big data, traditional media are facing unprecedented shocks, and it is urgent to accelerate the transformation of the media industry. The advancement of science and technology and the development of media integration have caused earth-shaking changes in the audience's usage habits of media products and media business models[1]. The development level of the media is positively correlated with the regional economic level[2]. The goal of media organizations is not only to maximize profits, but to pursue quality and realize the value of "public service" is its ultimate goal. The media market is a typical oligopoly market, and the behaviors and decisions of enterprises are typical strategic behaviors and strategic decisions. Market competition is intensifying, and achieving a win-win situation and cooperative gaming is the key to the sustainable development of the media industry. Competition urges media organizations to start rent-seeking activities in order to obtain monopoly status and monopoly profits. Rent-seeking activities can lead to inefficient resource allocation and cause serious economic losses. This requires the government to intervene in monopoly behavior. The government can effectively supervise monopoly prices and monopoly production, and at the same time provide financial subsidies for the losses of monopoly manufacturers caused by monopoly control[3].

2.2 The guiding role of the audience

Media products have dual attributes, which are both private and public. The market mechanism is mainly used to regulate private goods. Since the "free rider" phenomenon in public goods is more common, the government must assume the responsibility of regulating public goods. The output and demand of media products cannot be determined by individual decisions in the market, but must be determined by the government using cost-benefit analysis methods. If the revenue of a media product is greater than or at least equal to its cost, it is worth producing[3]. As a commodity, its value is a combination of social and economic benefits. The use value is realized through audience reading. Most media organizations have formed an audience-centric business model, and the audience's attention resources are the real value. Economic development has increased the cultural consumption level of users, has led to diversification of cultural needs, and has prospered the media market. The media market is flooded with all kinds of media, and the audience's choices are more diverse. The pursuit of maximum utility is the behavior goal of the audience. Consumers should equalize the marginal utility of the last dollar they spend on each commodity purchase, so as to achieve the maximum utility under the given income, price and preference conditions[3]. Considering consumers' optimal purchase options and optimal purchase product combinations, this requires media organizations to produce heterogeneous products to meet consumers' different utility needs, and content is the key to winning in market competition. The audience's consumption of media products realizes the value compensation for media content. The value realization degree of media products should be measured by the Pareto criterion. Pareto optimality should be considered in the production and exchange of media products, so that the economic efficiency can reach the optimal state. Competition in the media market has become more intense, and audience experience and evaluation have become the focus of media organizations. With the gradual deepening of media convergence, customized services centered on audiences are favored by emerging media. Economic development has promoted the development of emerging media, and has unblocked communication channels with users, making it easy to understand and meet the needs of audiences in a timely manner.

3 The media's mechanism for economic development

3.1 The development of the media can activate the market economy and optimize the allocation of resources.

The media economy has become an important industry of the national economy. The biggest feature of the media industry is the high initial cost, the content cannot be consumed, and the low copy cost. Media products do not meet the premise of resource scarcity in economics.

Products are not exhausted after being consumed. Therefore, budget constraints and optimal allocation of influence resources and attention resources are the focus of media economic analysis. The consumption of media products must reach a considerable scale in order to achieve optimal economic benefits. How to minimize cost and maximize output is a key issue that enterprises should consider. Enterprises can expand the scale of production to increase economic efficiency, that is, economies of scale, but the expansion of production to a certain scale will cause diseconomies of scale. Enterprises must grasp this metric well. Due to the high initial cost, media organizations cannot simply rely on their own expanded reproduction to supplement media input, and need to absorb foreign capital to inject into the media industry's operations. Oligopoly is the most common market structure in the media industry. In an oligopolistic market, the behaviors of manufacturers influence each other. The marginal cost is always less than the average cost. The more audiences, the lower the average cost and the higher the marginal revenue, which can achieve economies of scale and obtain higher profits. In order to reduce transaction costs, companies can share specialized resources and professional skills, diversify operations, diversify risks, and give play to the advantages of economies of scope. The learning effect of learning by doing and the economies of scale can reduce the long-term average cost of enterprises. The basic law of short-term production is the law of diminishing marginal returns. Enterprise production should control the output at the point of maximum reward, that is, when the marginal output is equal to the average output. In the long-term production process, at first the enterprise faces the stage of increasing returns to scale; continuing to expand the scale, staying at the stage of constant returns to scale; further expanding the scale of production, it will enter the stage of diminishing returns to scale. While enterprises use economies of scale to reduce costs, they should also consider the issue of returns to scale and grasp the metrics. The Cobb-Douglas production function can explain this problem well[3].

3.2 The development of the media industry can expand employment and promote the transformation of economic structure

Technological factor owners obtain income by investing technology in production and business activities. In today's era of knowledge economy, the widespread attraction of high-tech talents is of great significance to my country's development of high-tech industries. Through horizontal expansion and vertical expansion, media organizations expand total investment and market share, increase media influence, help the development and application of new technologies, attract high-quality talents, increase employment opportunities, and develop new business models to improve the realization of media content and ability to accelerate the return of funds. With the expansion of production scale, enterprises can use more advanced technology and machinery and equipment to make the division of labor within the enterprise more reasonable and professional. Producers can maintain a specific output by substituting the two elements for each other, that is, marginal technology substitution. Taking capital and labor as an example, increasing labor input can appropriately reduce capital input, which not only saves money, but also creates more employment opportunities for laborers. However, under the premise of maintaining the same output, the amount of labor input is increasing, and the amount of capital that can be replaced is decreasing. Learning by doing means that workers, engineering and technical personnel, and production managers obtain production skills and knowledge from experience. Learning by doing can reduce the long-term production cost, which is called the learning effect. Opportunity cost is also an important link in production costs. Opportunity cost enables producers to transfer economic resources from low-income production to high-income production[3]. The competition between companies has prompted them to cater to the tastes of mainstream audiences. The product content is the same. The marginal utility of homogeneous content to consumers is gradually diminishing, which can also lead to rejection of the audience and loss of welfare. Producing heterogeneous products, cultivating an influential economy, and establishing reputation and brand are the magic weapon to win. The development of the media has promoted the development of the information industry, promoted the transformation of my country's economic structure to a knowledge-based economy, presented a diversified trend, guided the trend of consumption, brought faster and more convenient economic life, and created a lot of profits and taxes for China.

3.3 The media can narrow the information gap and

improve overall economic efficiency

Information is also a very valuable resource, and its value can be evaluated by expected benefits. Information can improve the utility and profit of an enterprise, reduce the risk and error of the enterprise's decision-making, thereby increasing the expected return. Information asymmetry makes the transaction cost between the market and the enterprise significantly different. Enterprises can use economies of scale and scope to complete part of market transactions within the enterprise, thereby eliminating or reducing the high transaction costs of some market transactions. Under the condition of incomplete information, if an enterprise wants to develop sustainably, it should replace profit maximization with the goal of maximizing sales revenue or maximizing market share. In the case of incomplete information and asymmetric information, the market mechanism can only solve part of the problem of information mismatch, which can also be solved by establishing "reputation". In the case of insufficient information, the market will be flooded with low-quality products, and reputation can help consumers distinguish between good and bad markets and choose high-quality products. Reputation increases the benefits of companies choosing honesty, and at the same time increases the cost of corporate fraud. It is also necessary for the government to regulate information to ensure that consumers and producers can obtain sufficient and accurate information and increase the "transparency" of the market. The media can spread information between audiences, enabling both parties to "know the world without going out" to make the right choice and avoid waste of resources. Technological advancement has made direct payment possible, making it easy for producers to fully understand consumers' consumption preferences and realize the use of consumer surplus. Using this part of consumer surplus can provide products that satisfy the taste of non-mainstream audiences and increase social welfare. The media maximizes the efficiency of market operations, optimizes resource allocation, and significantly improves overall macroeconomic efficiency.

4 Conclusion

The development of media economics provides valuable theoretical guidance for the media industry. The relevant principles of media economics can explain media activities well. Economic development has promoted technological progress, brought people a more convenient life, enriched consumption, and invigorated the market, thereby promoting the development of the media industry. The reform of the media has provided more opportunities for economic development, provided more employment opportunities for workers, optimized resource allocation, and improved overall economic efficiency. While enjoying the convenience brought by the media and economic development, we should not ignore the problems that exist and cause during the development process. As a representative of the cultural industry, the media industry guides the development of culture. As a country’s cultural soft power, culture is playing an increasingly important role in international competition. While we are developing, we should also prevent criminals and other countries from using cultural forces to infiltrate our country and attempt to dismember our culture. The adverse effects of the monopoly of the media industry cannot be ignored. Monopoly is not conducive to cultural exchanges and progress, and should encourage the cultural market to flourish. Other scholars can provide meaningful suggestions for related research.

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How Does the Booming Short Video Affect Attention Economy?

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Abstract: The 21st century is the era of new media. We-media, social media, short videos have emerged one after another. Not only have they changed the form of media, but also they have brought tremendous changes in terms of media functions, communication methods and communication relationship etc. Focused on the development of short video platforms in China in the last decade, this essay analyzes the impact of short videos on society, economy, and humanities. Also, it aims to propose a solution to the problem "how to make good use of the scarce resource of attention and truly realize the attention economy".

Key words: Short video; New media; Live-streaming sales; Attention economy

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1 Introduction

The 21st century is the era of new medias which are facilitated by internet information process. With the help of wireless communication networks, satellites, and terminals such as computers, mobile phones, digital televisions, new medias provide users with information and entertainment services in a revolutionary way. It is not only about high tech or science, it is closely related to social relation of production, social structure as well[1]. In the past 10 years, short video platforms have sprung up in China. Among them, Kuaishou, Douyin are the very eye-catching ones. Particularly, 2020 has seen the eruption of short videos. During the new coronavirus epidemic, people's activities were restricted, and shopping, entertainment depended heavily on mobile phones and online selling. As a result, 2020 became the year of the outbreak of short videos, which has revolutionized the life of whole society. As the idea of "mobile first" and "video first" gains momentum, there came a new way to entertain people as well as sell goods and do publicity for companies, cities. Internet celebrity anchors such as Wei Ya, Luo Yonghao and Li Jiaqi are going viral. Agricultural things sold by the county magistrate are becoming a fashion. Cities are receiving stunning attention with the mayors using short videos to build on its image. People are busy posting and sharing things with others. "Attention economy" is flourishing.

2 Definitions of "attention economy" and "short video"

In 1997, American author Michael H Goldhaber first put forward the concept of "attention economy" in his papers, using words like "attention shoppers" and "attention economy and net". As Goldhaber pointed out, in digital world, what is scarce is not material thing, not information but attention. And the scarcity of attention means that it can be turned into wealth. Attention is more important than money[2]. The attention economy comes with it its own kind of wealth, its own class divisions- stars vs. fans - and its own forms of property, all of which make it incompatible with industrial economy.

"Short video" refers to the video that is played on new media platforms at a high-frequency, which is suitable for watching on mobiles at one's leisure. Its content is all-encompassing, including small skills sharing, humorous and witty talks, fashion trends, creative advertising, mini-lecture etc. Short and concise, but informative and interesting are its features. Normally, it's length ranges from

Figure 1. Daily active user numbers of Tik Tok

a few seconds to a few minutes. In addition, it is low cost and has low threshold. The producing process is simple and does not require specific equipment. It can be re-tweeted only if the user registers.

3 Development of short video in China

In the last decade, short video giants such as Kuaishou and Douyin have emerged in China's new media market. According to the statistics of iiMedia Research, the scale of China's short video market has reached 140 billion RMB.

Born in March 2011, Kuaishou was originally a mobile application for making and sharing GIF pictures. In November 2012, Kuaishou transformed into a short video community where users can record and share their lives. In April 2017, Kuaishou had more than 500 million registered users, 65 million daily active users, and an average of millions of short videos uploaded daily. In November 2017, its total number of registered users has exceeded 700 million, the number of daily active users has exceeded 100 million, and more than 10 million new video contents were generated daily. In March 2020, its monthly active users exceeded 44 thousand million.

The promising short video market has attracted more participants and competitors. In September 2016, "Today's Toutiao" launched Douyin (version abroad is Tic Tok), a music short video community platform. On Douyin, people can choose music and songs, and shoot short music videos of their own. During the 2018 Spring Festival, Douyin's daily active users rose from less than 40 million to nearly 70 million. In June 2018, Douyin's domestic daily active users exceeded 150 million, and monthly active users exceeded 300 million. In mid-July, Douyin had more than 500 million monthly active users worldwide. In March 2020, its monthly active users reached 51 thousand million, showing an increase of 14.6% than its previous period (Figure 1). Among them, 40% users are in the age of 24-30[3].

From the rise of Kuaishou and Douyin, we can see a tremendous change is undergoing in mass communication. In the 21st century, the term "audience" is a combination of information producer and consumer, namely "prosumer". Based on the Web 2.0, the new media enables everyone to create and disseminate content on their own will[4]. Powered by new media, the platforms are busy cashing the flow.

4 Functions of short video platform

4.1 Lighting up life and recording daily life

In the sea of short videos, there are grassroots' records of life along with real-time interactions between Internet celebrities and fans. The show time is no longer a privilege of celebrities. With short videos, ordinary people can also have their show. Here, people can be the true self, watch what they like, and talk what they like with people of same mind; view a bigger world and be viewed by the world. Su Hua, CEO of Kuaishou, noted that Kuaishou would act as a museum of records, in which people can learn about China.

4.2 Increasing publicity and building public image

In addition to sharing one's life, short video also contributes a lot in terms of publicity of a company , a city or a country.

In 2018, Press Center of SASAC (State-owned Assets Supervision and Administration Commission) signed a strategic cooperation with Douyin, and the first batch of 25 central enterprises (including China Nuclear Power, Aerospace Science and Industry, and Aviation Industry, etc.) entered Douyin. The day before the official signing of the cooperation, the News Center opened its account "State-owned Xiaoxin" in Douyin and released its first video, which was played more than two million times in less than 12 hours, and received over 110,000 likes and 150,000 follows.

In 2019, China Daily launched a global short video contest "@China". It received about 430 thousand works from home and abroad, covering the great achievements of China in the past 70 years, revealing a vibrant, peace-loving, modest Chinese people to the world.

In November 2020, Ding Zhen, a Tibetan guy, became a celebrity overnight. From domestic new media platforms such as Douyin and Weibo to local medias, CCTV platforms, and foreign new media platforms, "Sweet Wild Boy" Ding Zhen has topped the hot search rankings on various platforms for many consecutive days. His hometown, Litang county (Ganzi, Sichuan), also came to the spotlight. Being the spokesman of his county, Ding Zhen made his show in

the Ganzi propaganda film "Dingzhen World", he also had interactions with fans on *Weibo @ Ganzi Culture and Tourism* as well as other platforms. In the ten days from November 20, 2020, the search volume of "Litang" soared by 62%, which is four times that of October National Day. The "Litang" county wasted no time in this attention economy to boost its tourism by offering free tickets, discounts on hotels, cheaper air tickets, etc. In just 9 days, the reception volume of 13 monitored scenic spots increased by 112.31% compared to the period last year.

5 Revolutionizing the presentation and selling of goods

Unexpectedly, live-streaming sales have become one of the hottest words of 2020 in China. "Live-streaming sales" is a new way for displaying and selling products online. Unlike traditional TV sales, here on the internet chat room, the host or hostess can introduce products in their live show, answering questions and interacting with fans in a more harmonious way. Needless to say, the 2020 corona virus epidemic contributed greatly to the success of live-streaming sales, during which shops were unable to operate and people were restricted from shopping. Online shopping has become a convergence between shops and shoppers. Social media live broadcasts led by internet celebrities such as Wei Ya, Li Jiaqi, Luo Yonghao and others have opened up huge business opportunities. As the "First Lady" of live streaming sales, Wei Ya accomplished a personal sale of up to 20 billion RMB in 2020. In an on-site interview, the host witnessed the miracle of Weiya selling 2000 silver bracelets in 5 seconds. In the pre-sale of Double Eleven in 2020, near 12 o'clock in the night, the number of people in Li Jiaqi and Wei Ya's live broadcast room exceeded 100 million. Many products were sold out within seconds. "Sold out in seconds" has become a hot word regarding live streaming sales. 2020 is known as the first year of the outbreak of short video[8].

6 Problems and solutions

While enriching people's lives, producing fat checks, short videos also have caused many social problems.

6.1 Misuse of attention leads to lost of time and privacy.

To some extent, the web and the net can be seen as spaces in which we live our lives nowadays and attention is flowing in the opposite direction from those mountains of information. To get some contentment and a sense of control, many of us are selling ourselves far too cheap. "We watch a 30-second ad in exchange for a video; … we freely pour sentence after sentence, hour after hour, into status updates and stock responses…", its cumulative cost, while hard to quantify, affects many of those things we hope to put at the heart of a happy life: rich relationships, rewarding leisure, meaningful work, peace of mind[5]. When using a free online service, we ourselves became the product that our behavioral data and the quantifiable facts of us are constantly blended for sale.

What's more, the pan-entertainment phenomenon behind short videos reviews mental impetuousness. In the age of information explosion, people are caught in too much "fast food reading" and are content with too much "shallow & superficial" experiences of joy.

6.2 Some short videos are vulgar, and the rights of minor children are damaged.

Statistics show that more and more minors are becoming addicted to the internet, neglecting their studies. Some are even to be found precocious. On October 31, 2017, a 14-year-old girl posted a pregnancy video in Kuaishou.

Since 2018, in order to be eye-catching, Lady Tang scantily dressed, shot fishing videos while wearing red scarves! The videos were uploaded onto the Kuaishou platform with a viewing of more than 3 million times. However, as is well known, in China, the red scarf is the symbol of the Chinese Youth Pioneers, a corner of the red flag and is associated with revolutionary martyrs. Tang's behavior seriously desecrated the red scarf and caused bad social impact.

On July 3, 2018, TikTok, an overseas version of Douyin, was temporarily banned in Indonesia because of content that had an adverse effect on young people, announced by the Indonesian Ministry of Communications and Information Technology.

Recently, the British government released a national report on children's mental well-being. The study identifies a deterioration in children's feeling of well-being, with an increase in the number of children aged 10-15 and young people aged 16-24 reporting being relatively unhappy over the last decade.

"15-year-olds find it harder to make friends," said school surveys by the OECD, a club of mostly rich countries. Because if your friend is always looking at her phone, it may not matter much whether you are around or not[6]. So it can make everyone feel left out, or thwart all intimate connections. Perhaps technology has messed up all young people, even those who abstain from it.

It is high time that measures should be taken to deal with the above problems. On the one hand, supervision should be strengthened, a clean and upright network environment should be ensured; laws and regulations should be made and deployed. On the other hand, real interpersonal communication should be emphasized. Family time shouldn't be replaced by screen time. After all, VR virtual communication cannot and shouldn't replace face-to-face talk.

To enjoy freedom of speech, everyone must shoulder the responsibility of "gatekeeper", distinguish right from wrong, publicize mainstream social values, and refrain from disseminating unhealthy and untrue information. For the platform, it should be more self-disciplined and do more self-examination. It should keep in mind social responsibility and promote society main melody while making profits.

In April 2018, Kuaishou added a "Parental Control Mode" on its homepage to limit teenagers screen time. In July of the same year, Douyin announced the launch of the "Sunflower Project"-the first domestic short video platform to focus on the healthy growth of minors. Douyin launched 10 measures at multiple levels including review, product, and content hoping to give every child sunshine, rain and dew. What's more, Kuaishou and Douyin have issued special rectification announcements for illegal live broadcast accounts and content in 2020.

6.3 The digital divide makes the inferiors invisible.

Internet technology and new media has promoted global economy and interaction. Meanwhile, it also posed new challenges to the inferiors - the senior people who can not handle the new technologies, people in poor regions who do not have access to it. All these results in a huge information deficit.

Alvin Toffler, the American future sociologist, noted in his book "Power shift", that the digital divide in information and electronic technology would cause division between developed and underdeveloped countries. 30 years passed, and the truth is that while the developed countries are enjoying the benefits of new technology, the underdeveloped are suffering from info deficit.

Fortunately, more and more people are becoming aware of this problem. In July 2000, WEF (the World Economic Forum) submitted a special report "From Global Digital Divide to Global Digital Opportunity" to the G8 summit. At the APEC meeting held that year, the digital divide became the focus of world attention. On November 24, 2020, the General Office of Chinese State Council issued a notice on the implementation of a plan to help the elderly in the use of new technology.

7 Conclusion

With the convergence of medias and rising of new medias, we are entering an information age, enjoying a great "feast" of world life. Some of these "eye candies" are delicious, some of them are delightful, still some deteriorated. "How to deploy our scare resources of attention and not to be overwhelmed by the video flood" is a pressing issue for everyone to think and tackle.

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The Development and Application of Charitable Trust in China

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Abstract: Charitable trust is a combination of charity and trust industry. The development of charitable trust started earlier in foreign countries and has been widely used. Charitable trust in China is still in its infancy, lacking legal support and a complete operation system. Problems such as unclear boundaries and imperfect tax preference system has occurred, and a complete public trust system has not yet been formed. But from a long perspective, charitable trust has a high application value and prospects in China's poverty alleviation, pension and other fields. In this paper, the development status of charitable trust in China is summarized and analyzed.

Key words: Charitable trust; Development status; Tax preference

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1 Introduction

1.1 Concept of charitable trust

Charitable trusts are also called "public trusts". A trust whose purpose is only to realize social charity and whose beneficiary is the whole society or part of the general public. Trust is not only a special property management system and legal behavior, but also a financial system, a part of the modern financial system. Trust is an act that the trustee entrusts the property to the trustee and gives the right to use the property to the trustee on the basis of trust, and the trustee manages or disposes of the property in his own name for the benefit of the beneficiary or for specific purposes. The function of trust is summed up as "being entrusted by others and following others' advice to manage money for others".

Charitable trusts are established for the purpose of public welfare. The beneficiaries of charitable trusts are all members of the society. Charitable trusts are diversified and have no clear indication and regulations. The rules of equity generally divide charitable trusts into four categories: those that relieve the poor, those that promote education, those that promote religion, and those that benefit society Charitable trusts are also known as public trusts. There is no difference between the two in countries such as the United Kingdom and the United States in terms of laws and relevant regulations. Therefore, they are regarded as the same in academic terms. The business process of a charitable trust includes application for establishment of a charitable trust, transfer of trust assets, management and use of trust property, trust supervision and trust termination.

1.2 Characteristics of charitable trusts

In Western countries, the development of charitable trusts can be roughly divided into three stages: classical charitable trusts, growth leaps and development matures. Charitable trust appeared early in Western countries, especially in the United Kingdom and the United States. As early as the 17th century, the United Kingdom issued relevant laws and regulations, so charitable trust has become a relatively perfect financial product in Western countries. As for how to define whether a trust is a charitable trust, the legal provisions are to measure whether it is set up for the purpose of charity. Charity is the most core element of charitable trust.

The purpose of the charitable trust has absoluteness, according to the relevant stipulations, the purpose of the client set up a trust there is no single orientation, for a charitable trust, is dedicated to public welfare, the purpose of all its one if there is an exception to the trust cannot be charitable trust and enjoy the corresponding preferential tax. Such strict requirements are to prevent people from doing

private things under the guise of public welfare. Charitable trusts are established to serve the whole society, thus ensuring the development of charitable trusts.

The assets of charitable trusts are independent. After I intend to set up a charitable trust after principal basis, the disposition of property of the principal is shifted. In the process of the use of the trust fund, the client can't casually disposal of property, and has commissioned the property and the fixed assets of the principal and self-owned assets phase separation, mutual influence and interference. In the process of the trustee's disposal of the trust property, provided that the trustee does not violate the relevant legal provisions, if there is any loss of the trust property, the loss shall not be borne by the trustee but by his own trust.

Property independence is one of the important characteristics, ensuring the security of property, reducing the economic risk in the process of operation.

Another characteristic of charitable trusts is the use of the principle of approximation for public welfare purposes.

After charitable trusts are established legally, due to the continuous development of society and the emergence of social problems, the original purpose of charitable trusts will change due to the some certain social problems or the amendment of laws and changes in the legal system. When such changes occur, the principle of approximation enable charitable trusts to continue to operate. This is the most important difference between charitable trusts and other general trusts. If the original purpose of the charitable trust cannot be achieved in the process, and the goal is transferred within charity, it will still be valid, the purpose of which will be changed to a similar purpose in order to keep that charitable long term, sustainable and promising. There are still some ambiguities and deficiencies in the principle of approximation in China. In the development of charitable trusts, we can further learn from the experiences of the United States and the United Kingdom, which have relatively complete legal provisions, and develop charitable trusts with local characteristics in China[1].

Charitable trusts do not designate beneficiaries. The beneficiaries of a charitable trust are not specified in a certain category, but belong to the whole public. When determining the beneficiaries of charitable trusts, it is necessary to take whether they meet the social public interest as the standard, rather than the status and number of beneficiaries as the screening standard. There can be no "private connection point" between the principal and the beneficiary. However, in the actual operation of charitable trusts, the definitions of private connection points and social public interests need careful consideration and rational understanding of social public interests.

2 The development status of charitable trusts in China

Chapter VI of the Trust Law issued in 2001 contains 15 provisions on the definition, establishment, use of property, establishment of supervisors, operation reports, supervision and termination of charitable trusts, including: (1) The purpose of the establishment of public trust is to meet the needs of charity and serve the social public groups; (2) The trust property and its income can only be used for the purpose of public welfare, and cannot be used to meet the needs of individuals; (3) To be established upon the examination and approval of the regulatory agency of public undertakings; (4) Charitable trusts need to set up a corresponding supervision system and special supervisors to supervise and regulate them, etc. In China, charitable trust has higher application value and better development prospects. Charitable trusts can improve the ability to preserve property, enhance the independence of property, and are applicable to preferential tax policies[2]. In 2018, China's charitable trust industry saw a significant increase in the number of charitable trusts, and continued at a fast growth rate[3]. The newly established trust property reached 1.201 billion yuan, an increase by 84.42% compared with 2017. In 2019, the number of provinces and cities in China that have registered for charitable trusts reached 23, meanwhile, Yunnan province completed filing for the first charitable trust with "dual trustees". At present, there are obvious regional differences in development of charitable trusts. The filing systems of charitable trusts are concentrated in developed regions and regions badly to be lifted out from poverty.

From the perspective of the main mode of charitable trust development in our country, there are mainly standard mode of charitable trust, "charitable trust + charity" mode, "charity + charitable trust" mode, "public welfare purpose trust + charity" mode, "family trust + charitable trust" mode, "non-cash assets + charitable trust charity organization" mode, etc[4].

In terms of the characteristics of the development of charitable trusts in China, the first is that the development of charitable trusts still has short-term effects, which are mostly driven by specific task-oriented projects, such as poverty

alleviation, assistance and other projects that need short-term results. Secondly, the development varies from local economic development and characteristics. In developed areas, charitable trusts are in a large number and are well operated, while in underdeveloped areas, the situation is quite different. Thirdly, the trustee models of trust companies continue to heat up. Fourthly, the source of trust property is more extensive, and presents the characteristics of dynamic and pluralistic. Fifthly, innovative poverty alleviation models have appeared frequently, such as "poverty alleviation by industry + targeted assistance" and "charitable trust + corporate loans".

At the same time, there are still some issues and limitations with the development of charitable trusts in China, such as unclear tax preferential policies, single source of trust property, short of supervision, rigid principle of complete public welfare for charitable purposes, and the too little supporting to the development of charitable trusts from the Charity Law [5].

3 Charitable trust tax and legal issues in China

3.1 The status quo of tax preference system for charitable trusts in China

From the perspective of the motives of donation to charitable causes, it can be roughly divided into two categories[6]. One is the traditional virtue of voluntary help with the poor, which is a kind of altruism and does not seek returns. The other is a self-interested motive to improve the reputation by means of donation or obtain a sense of social recognition or as well as certain honor or support preferential treatment. Whether from the perspective of self-interest or altruism, support from certain tax policies and legal policies can enhance this kind of donation to a certain extent, which is conducive to the development of charity, and promotes the mutual benefits between charity donors and beneficiaries.

The tax preference system of charitable trust mainly includes the content, object and management system of the tax preference of charitable trust.

In The Theory of Modern Trust Law, it was first proposed that charitable trust plays a key role in charitable causes and is an important model and method to achieve charitable purposes[7]. The tax preferences enjoyed by China's philanthropic subjects can be classified into three categories, namely, the preferences of donors, charitable organizations themselves and beneficiaries[8].

At present, the tax preference system of charitable trust in China is not perfect, and laws related to charitable industry in China are still insufficient in quantity.

In terms of the tax policy of charitable trusts, other laws need to be used for reference, which hinders the development of charitable trusts to some extent. The preferential tax system of charitable trust in China has different provisions according to the trustees of charitable trusts. When charitable public welfare organizations or foundations act as trustees of charitable trusts, they can enjoy corporate income tax, value-added tax, property tax and other preferential policies. The Charity Act provides that both charitable organizations and trust companies can become beneficiaries of charitable trusts (the Charity Act). According to the provisions of the Charity Law, charitable organizations as trustees can enjoy tax advantages in the operation and flow of property, but trust companies, as for-profit organizations, do not enjoy tax advantages when they act as trustees. While in the process of actual operation and development of the charitable trust has related regulation and file charitable trust can obtain certain tax and preferential policy support, but the policy and system in the subsequent development of charitable trust has not really been implemented, also has not issued a formal legal norms, the charitable trust in their daily use of capital and business processing can't enjoy the corresponding preferential tax policies.

3.2 The preferential system of charitable trust in China is insufficient

Charitable trust has the unique function and specific, in the process of development of continuous innovation out a variety of patterns, in an important position in China's charity, but the development of charitable trust in China compared with western developed countries, there are some shortcomings and limitations, the charitable trust in China than in other countries such as Britain and the United States, and other countries, started late, and development is slow, for the 1601 charity for reasons of law in Britain charitable trusts have relevant regulation and system, and the charitable trust in China in the 20th century began to produce and slow development. Charitable trusts in China lack an independent tax preference legal system.

Charitable trust started late in China, and compared with other financial products, it has its particularity and uniqueness. In the actual operation of charitable trusts, existing laws and regulations need to be used for reference. In the process of social and economic development, new

social problems and new situations are constantly emerging, and the original laws are gradually unable to meet the needs of economic and social development.

At present, the tax incentives of charitable trusts in China are relatively small. Although the relevant laws stipulate that charitable trusts can enjoy tax incentives, there are no specific provisions on the preferential policies of charitable trusts, and there is no clear explanation on the conditions and practices for enjoying tax incentives. The other has not yet formulated specifically for the trust tax system in our country, due to the trust the trustor, trustee and beneficiary tripartite main body and property transfer twice, although the charity do not need to collect taxes, but if it is equity and housing property, such as regards to the transfer request, according to the existing transfer tax system will lead to double taxation problem in the two property transfer.

The Charity Law stipulates that the trust property and trust proceeds of public trust shall not be used for non-public purposes, and that part of trust property shall not be used for public welfare, and part of trust property shall not be used for non-public welfare public trust. However, in practice, it is often the case that the property and income of trust property are used for public welfare and non-public welfare.

3.3 Suggestions of improving China's charitable trust tax system

Improve the legal system of charitable trust tax preference in China.

At present, the relevant laws of charitable trusts in China are still lacking and inadequate to some extent, leading to the problems of inconsistent rights and responsibilities and unclear boundaries in the actual operation of charitable trusts in China, which to a large extent hinders the development speed of charitable trusts in China, and is prone to the problems of inequality and imbalance. It is necessary to provide a favorable legal environment for charitable trusts in China, establish a unified and sound legal norms, and standardize the preferential tax system for charitable trusts by legislation[9].

To solve the problem of double taxation, double taxation increases the operating cost of charitable trusts, which is not conducive to the development of charitable trusts. It is necessary to establish a sound and perfect tax collection standard, and give appropriate preferential treatment and reduction to the charitable tax.

To strengthen the management of tax preferences for charitable trusts, it is necessary to pay attention to the standardization of legislation and management while improving the relevant laws and regulations of charitable trusts in China, so that the legal norms are highly standardized and operable[10].

4 Conclusion

Charitable trust originated from other countries, such as the United Kingdom and the United States, and came to our country very late and developed slowly relatively in our county. The current charitable trust and charity career, has been playing a role in speeding the slow development since it was first introduced to China in 2018, and has entered the stage of rapid development and constantly improved its impact on China's poverty alleviation and pension etc.

However, there are still many deficiencies and limitations with China's charitable trusts, such as not yet forming a complete legal and regulatory system and unclear tax preference system.

The development of charitable trusts in China is still during the exploratory period, so we need to continue to learn from foreign experiences and develop charitable trusts with local characteristics in China.

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Discussion on How Government Can Provide Public Goods Better

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Abstract: Public goods are non-exclusive and non-competitive commodities. Because of this characteristic, the government has become the main body of providing public goods in most cases. However, at present, the government has problems such as low efficiency and waste of resources in the process of providing public goods. Based on the perspective of public choice theory, this article analyzes why government failures occur in the process of providing public goods, and proposes path reconstruction suggestions.

Key words: Public choice theory; Public goods

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1 Introduction

Government failure in the supply of public goods refers to the inability of individuals' demand for public goods to be well satisfied.The government and its departments have low efficiency in the supply of public goods, unbalanced supply and demand, and budgetary deviations due to their own characteristics, making the government's behavior not as effective as theoretically possible. In the process of remedying and correcting market failures, government deficiencies may continue to be exposed, resulting in government failures under market failures. At this time, the problem of government failure has become an important topic in the study of public choice theory. Since this theoretical perspective has unique insights into the analysis of the phenomenon of "failure" in the process of providing public goods by the government, it often provides a theoretical basis for studying government behavior. In this short essay, firstly, reason why the government's behaviour is inefficient sometimes from the perspective of public choice theory was pointed out and some suggestions were made.

2 Literature review

In economics, public goods are non-exclusive and non-competitive commodities. "For such items, users cannot be prohibited from using them just because the user has not paid. In addition, one person's use will neither prevent others from using them, nor reduce their availability to others[1]. The representative of traditional public choice theory is the capture theory, rent-seeking theory and autonomous governance theory.

Stigler, a well-known American economist, the author of the regulatory capture theory, pointed out that "government regulation is an institutional arrangement that responds to the needs of interest groups to maximize"[2]. Peltzman took this as a theoretical basis and proposed a static theoretical model to analyze the problem of regulatory capture, and believed that interest groups provided their political supports to regulators in exchange for gaining favorable regulatory legislation[3]. Becker analyzed the issue of regulatory capture. He believed that the game between groups affects the formulation of rules. This theory has greatly deepened the understanding of the reasons for the failure of government regulations, and in practice promoted the deregulation reforms initiated by the major judicial countries in the 1970s[4].

The purpose of rent-seeking activities is to obtain economic benefits by manipulating the allocation of economic resources. Economists believe that these activities are harmful to the economy and society. This approach may

reduce economic efficiency through inefficient resource allocation. In addition, it often lead to other devastating consequences, including increased income inequality, reduced government revenue, and reduced competition.

Since then, the theory of autonomous governance of public pond resources appeared. As a public good, "public pond resources" are different from private goods. It's difficult for the resources to be exclusive in the sense of consumption and shared by the public. But it is a limited public resource, which will decrease as heavily used by people, so it is either-or-competitive in the sense of consumption[5]. In the process of reshaping the relationship between the government and society, after Eleanor Ostrom examined a large number of cases of governance of "public pond resources", he found that the institutional arrangements in many cases were the combination of Leviathan system and privatization systems. In addition, people in many communities can achieve effective governance of certain resource systems in a relatively long period of time with the help of institutional arrangements that are different from the state and the market[6]. Therefore, "Leviathan" style government and privatized markets are not the only solution to the dilemma of collective action. He proposed a compromise, theory of autonomous governance.

Although the cores of these three theories are different, they all assume that the government is a self-interest maximizer rather than a public benefit maximizer. Due to the existence of this assumption, the government may first consider maximizing the interests of the captors or regulators in the process of providing public goods, and less consider the interests of the people. Therefore, the theories of the public choice school are also called "regulatory privateness theories[7].

3 Reasons for the inefficiency of government

The economic man behavior public choice theory of the main body of public goods believes that government departments have self-interested motives and self-interested preferences, as well as rational "broker" thinking, aiming to obtain the greatest benefits with the least cost in political activities. Although public goods are of public nature and public benefits, the economic man behavior of the supply subject drives some governments to operate behind the scenes. Starting from their own interests and logic, they focus their resources on inputs with quick results and short cycles, and implement some so-called "achievement projects" and the "face project", ignoring the slow and long-term supply of general public goods[8]. In a nutshell, the reasons for the low government efficiency can be summarized as the existence of internality and monopoly.

3.1 Internality

Government actions have internal effects and lack the concept of cost and profit. Under non-market conditions, internally expand the institutional supply curve, that is, increase institutional costs, making them higher than technical costs, leading to excess total costs,higher unit costs and non-market output levels lower than socially effective levels[9]. To put it simply, due to the internal nature of the government, policy makers will not check the cost and the final benefits too much, as long as they can complete the tasks in the system, this will lead to a reduction in government efficiency and the government cannot protect the public interest well.

At the same time, due to the existence of internality, corruption and corruption occur from time to time, which exacerbates injustice and inefficiency. As Buchanan said: "In public decision-making or collective decision-making, there is actually no process of making choices based on public interests, but only the process of contracting between various special interests"[10]. When officials do not emphasize public interests but seek private interests, it is inevitable that the government will fail.

3.2 Monopoly

As public goods are non-exclusive, non-competitive, etc., the government (rather than the private sector) dominates the provision of such products. In this case, the government's motivation sometimes is not solving the problem, but keeping the problem existing, so that it can apply for more fund to solve the problem. At the same time, the government may seek benefits for certain companies in some monopolistic public goods industries under the guise of serving the public interest. Special interest groups evade market competition in order to seek government protection. In order to achieve high monopoly profits, they often conduct various "rent-seeking activities", which further aggravates the government's inefficiency.

4 Suggestions of improving the efficiency of public goods supply

Although the public choice theory originated in Western countries with relatively same peace of market economic development market, it is an important reference for Chinese government to reform and improve the existing system and government efficiency.

4.1 Improving the awareness of costs and interests within the government

First of all, governments and departments must be aware of the limitations of national resources, and the traditional view of ignoring the cost of government assets must be eliminated. Government agencies must have an awareness of corporate efficiency. The first specific measure it that the administrative cost indicators can be included in the assessment of government agencies and government personnel at all levels. Only if everyone's personal interests and government efficiency are linked, can government members realize the importance of the government's costs and benefits, thereby increasing their enthusiasm and efficiency. In addition, the incentive mechanism at the institutional level can be improved. When the internal members of the government focus on saving costs and improving efficiency, the government will accumulate more benefits and better provide public goods. And part of the benefits can be used as incentives for government employees to continue to improve efficiency, thereby forming a virtuous circle of efficiency-profit-incentive-efficiency.

4.2 Strengthening institutional constraints and supervision

Buchanan believes that "to change the outcome of a game or competition", it is not important to change the people participating in the competition. The important thing is to change the rules of the competition[10]. Absolute power leads to absolute corruption. One of the important reasons for the inefficiency of the government is the lack of supervision. At present, China is working hard on the improvement of internal supervision mechanism of the government. The first is to improve and reform our country's existing fiscal system, and to clarify the allocation and use of national finances with regulations, norms and other institutional methods, so that government personnel have a clearer understanding of government costs and resources. Second, we must focus on the accountability mechanism. For government personnel who fail to exercise fiscal power in accordance with laws and regulations, damage state property, or sacrifice public interests for personal gain, they shall be investigated for administrative and criminal responsibility in accordance with the law.

4.3 Introducing a competition mechanism to improve the efficiency of government

Public choice theory believes that the "invisible hand" can play a great role in economic activities, so it advocates market-oriented reform of government institutions. The introduction of a competition mechanism in government agencies is conducive to breaking the government's monopoly on public goods, while eliminating its internality to a certain extent, helping to improve the efficiency of the government and the level of public goods provided. On the other hand, it can break the inertia of thinking, government departments can guide social capital and private capital into the field of public services, and actively promote government and social capital, private capital and cooperation models. The government controls the direction in core areas and gives private enterprises more space and autonomy. The existence of this kind of competition is conducive to the improvement of government control efficiency.

5 Conclusion

The government is one of the most important suppliers. However, the government's inefficient supply is closely related to its monopoly position and lack of effective supervisions and restraints. On this basis, the public choice theory focuses on the solution of government efficiency, constructing a diversified public goods supply system, so that the supply of government public goods will shift from a single government supply to the coordinated participation of multiple entities such as government and society, so as to realize the diversification of supply entities. This mode of multiple collaborative participation in the supply of public goods has changed the situation of a single government supply of public goods, adjusted the role of society, improved the acquisition of consumer demand expression paths, and satisfied consumers' differentiated and individual needs. This program has important guiding significance for the improvement of the administrative capacity of government officials.

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A Study of Smart Lighting in Smart Cities

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Abstract: With the rapid development of science and technology, people gradually realized that intelligent lighting can also be applied in smart cities. This paper briefly introduces the functions of intelligent lighting and the benefits it can bring to smart cities, and also predicts its possible future development.

Key words: Smart lighting; Smart cities; 'Five remote'

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1 Introduction

The 21st century, is a technology explosion age as tons of new technologies emerged. Among all these technologies, some of them has significantly impacted our daily life, such as computer technology, communication technology and automatic control technology, etc. With these developed and mature technologies, our society has become more and more intelligent. Meanwhile, smart lighting technology showed up, bringing more convenience to our lives.

Before knowing about the benefits of smart lighting, you should know what the smart lighting is. Smart lighting, a kind of technology developed based on computer technology, wireless communication data transmission technology and smart information processing technology, is able to intelligently controls light equipment, in an attempt to create a new, comfortable and convenient method of offering a better environment in our daily life and work.

2 Application of smart lighting in smart cities

In 2007, EU first proposed the concept of smart cities. Then, IBM company brought a new idea of 'Smart Earth' on 2008 Annual Forum in November when smart cities really started to attract people's attentions. In 2012, the ministry published an announcement about developing the national smart city pilot work, our country also disclosed the total number of pilot work, about 209. The 13th Five-year Plan also put forward to strengthen the construction of modern information foundation, promote big data and internet development. Building smart cities means higher requirements for smart lighting system. The other way around, the advanced smart lighting system technology can also promote the development of smart cities. So, it's a win-win strategy.

3 Smart city lighting monitor system

At present, based on the original imperfect 'three remote' and 'five remote' system and the location information system platform, a dynamic smart lighting monitor system has already entered the filed of smart lighting by applying big data, cloud calculation and internet technology. Intelligent city lighting monitor system is a complicated system which applies an advantaged communicate method, computer internet technology, automatic control technology and automatic detection technology, it can control and manage city road lighting instantly and accurately. Intelligent city lighting monitor system is supposed to be capable of remote detecting, remote communicating, remote controlling, remote regulating and remote inspecting, in order to finally not only accomplish automatic detection, feedback and alarm as well as data collection, statistics and analysis functions.

3.1 Remote detection, remote communication functions

Intelligent city lighting monitor system necessarily has powerful function of sensing and detecting, as it is an important symbol that lighting system intelligent level already got improved. Sense and detection system is consisted of a lot of different senses functions that work

together and continuously to detect and collect the data in streetlamp area like real time voltage, current, states of contactors, active power, reactive power, power factors and electricity consumption. And then the data is sent back through the power line carrier communication technology, ZigBee communication technology, UWB carrier-free communication technology, and so on. Finally, these feed back data is sent to the remote controlling and management center, and then the analyses on the working situation for each areas and each streetlamps to master the reality power is performed, the numbers of turn on or turn off the switch, intensity of illumination, open or light lamp rate and saving electricity resources information.

3.2 Remote controlling function

By employing the smart lighting monitor system, can achieve the remote control in streetlamps switches, luminance control and lighting time. According to different management requirements, adopting different controlling modes such as time controlling mode, light controlling mode, pressure controlling mode, voice controlling mode and side road mode, etc. For example, put the time of switching lamp into the database, according to the longitude and latitude, seasons, holidays, and different situation on weather to achieve the so called 'time control', which can automatic timing control streetlamps in night light mode or half night light mode, the manage people can also point at some specific situations of one switch or more switches to switch control, by using different ways like single light, grouping, partition, city switch and so on. It also can base on the change of seasons and weather to make 'pressure control' or 'lighting control', power under some special condition like weather or time can be adjusted by the controller through the sub-stations, so that we can change the luminance intensity of streetlamps to achieve the goal of 'lighting control'. Or by adjust the voltage and current to improve extra power consumption in line load caused by voltage fluctuation and achieve the goal of 'pressure control' energy saving. It can not only reduce the electricity power consumption but also extend the lifetime of streetlamps. Besides, it can feedback some information to remote controlling and management center according to sensors on the public roads to response the voice and speed for vehicles and pedestrians. So that the center can make a decision on whether turn on or turn off the streetlamps, the numbers of these and illuminance intensity, finally to get the goal of intelligent management.

3.3 Remote regulation and remote view functions

For detecting a scene of information and data it can transfer to the remote control and management center with the location information system and global positioning system related to the hardware and software, finally achieve the remote scheduling for smart cities lighting equipment parameters. Through some remote monitor or others related to communication to achieve the real time observation, and also under the support in technology to develop more 'in-deep' photos analyse so that it could give more and more data supporting for automatic lighting managements.

3.4 Automatic detection, feedback and alarm functions

Send some controlling commands through the remote control and management center, focus on controlling center on each streetlamps real time monitoring and make a round in the area. If there is something wrong, it could feedback the data to remote controlling and management center in some communication ways, and attract the attentions by flashing the figure to alarm. With the location information system, the fault point area's information could be quickly show and then the remote controlling and management center working people will contact the related maintenance people to handle this . This can not only improve the efficiency on detecting and reduce the intensity on workers but also decrease the responding time for the whole streetlamp system and improve the ability on dealing with the emergency.

3.5 Data collection, statistics and analysis functions

Smart cities based on the internet, big data and cloud platform foundation, require make full use of information and communication technical measures to detect, analyze and integrate the key information in the core system for city working. Lighting system which around the city you can find anywhere also can be the biggest and most convenient data collector for the big city, and play a bed rock role for the smart cities. And form the technology side, through installing the detection and sense terminals on each streetlamps, the information within the detection area of this streetlamp can be easier collected, so that the smart streetlamp can provide the first hand data for city management. Through the analysis and integration for a lot of data, we can find some unusual rules form the city working, which can offer the scientific and accurate data source to analysis the result, so that it can better work for smart cities management. But because of the diversity of collecting data and refer to a lot of complicated management

departments. So at present there still have a big problem on the information sharing. In a certain range it also need help of manager of this city to boost the overall programme in building the intelligent city and promote each management departments work and develop together like a family.

According to a new report, there are some cities have already started the building work on smart lighting controlling system, the most famous is the Beijing city lighting management center monitor system, it can tracks the sun light, detection about the weather condition, monitoring the urban natural illumination in remote and transport some video in remote within the global range. Also can detect the status of city lighting power supply and streetlamp facilities physical status in remote, so that some dynamic data can be gotten like facilities working status, capital status, environment condition and energy saving procession to achieve high efficiency city lighting management. With the accelerate boost on smart cities building processing, smart lighting controlling system can have a deep develop, improve and perfect in our country.

4 The important role smart lighting playing in smart cities

The concept of smart city just lately proposed, so most of building procession is at the beginning, and the important role of intelligent lighting is mainly showed in the following three ways.

4.1 Smart lighting can provide the data base on building smart cities.

In the construction of smart cities, whatever the smart government affairs, intelligent transportation or other related system, the most important and core content is to use the data exchange to make some decisions. Because the smart lighting system have important ability on integrated dealing matters and collecting the information on terminal which can give the support for data collection on smart cities. With the fast development of internet, people can make use of internet to monitoring some dynamic data in real time. So the mart lighting system can detect the complicated parameters in the scene. And make full use of the sensors in optical, radar, voice, electricity energy, photos, weather conditions to detect some hardly parameters change such as the traffic flow, the illuminance of the surroundings, decay of lighting, weather conditions, brightness of background, voltage fluctuations and etc. And then using the internet to translate the date into the application, so that it can provide some in time and efficient date on making scientific decisions. For example, by using the LED or OLED streetlamp monitoring system can get the fault information accurately, and pass by the department for streetlamps management to reduce the cost of fix the streetlamp. It can also use the data to link with the traffic light system to help as adjust function so that can achieve the traffic bypass flow in the busy time, finally it can provide the support for construction, improving and perfecting the smart transportation.

4.2 Smart lighting can bring some benefits for society in environment, economy, social and so on.

4.2.1 Environmental benefits

Lighting productions would cost a large amount of energy during making, transporting, using and dying, but with the fast developing of technology the update rate of lighting productions is also accelerating. At the same time, electricity energy consumption in the city increasing a lot rapidly, this also cause a large amount of carbon dioxide emissions which would directly influence people living environment. Smart lighting in the city can not only boost the development of new lighting productions, which can make the lifetime longer and longer, have better lighting effect, and with higher efficient but also can through the intelligent monitoring system to achieve the controlling on smart energy saving so that reduce the consumption on energy efficiently, reducing the pollution to the environment, finally produce a considerable environment benefit.

4.2.2 Economy benefits

Smart lighting system can achieve the city lighting streetlamp in one way controlling and management, the energy saving effect is obvious. Some scientists do a research about smart lighting management, it shows that the power saving rate could reach or more than 30%. If we consider the city level city have 30,000 streetlamps, the average power is 250W, the average lighting time in a year suppose is about 4000 hours and the energy saving rate estimate in 30%. So it is easily to calculate saving energy is about 30,000×250×4,000×30%=9,000,000 kW·h, it means that can saving the energy consumption in electricity about 7,000,000 RMB. However, in the point of view in city lighting environment, it is not a small charge for manual inspection and management maintenance. Smart lighting monitor system can let the manager clearly know the statues of each streetlamps in every block, finding the broken streetlamp and send professional to repair and maintain it, so that the cost of maintaining the lighting facilities can be reduced, the lifetime of lamp can also get extend.

4.2.3 Social benefits

Smart lighting can achieve the city lighting goals in integrated good management, real time detection alarm, predict the fault may happened, deal with the dangerous matter in time, handle the problem in processional and improving the efficiency on processing, so that the level of city lighting management can get a great improvement. It can also make sure the serve quality on city lighting side, reach the goal like responding lighting, beautifully lighting, safety lighting, improving the environment for people living, raising the transportation and social security safety, fully shows the public sever level and finally get to the last mission: improving the brand image of the whole city.

4.3 Smart lighting can promote the innovation and development of smart cities building models.

City roads lighting play an important role in the public works, the building money mostly come from the government financial funds. Remake engineering for the city smart lighting can use a financial models which called PPP (public-private-partnership), to enhance the teamwork with social finance. During the procession of construction, the company which has the proprietary technology would award an energy management contract with government project implementation department, signing a financial agreement with financial groups, also responded for offering the technical support and designing for the whole engineering, construction and operation service.

5 Future development ways on smart city lighting

After I talk about so many functions and benefits on the smart lighting, It's time to show my opinion for the smart lighting future. After I read some literature related to this part and found some information from the internet, I though the future development in smart lighting can be divided into two parts. The first one is traffic monitoring, secondly is environment monitoring. You may feel worried about that is these parts, I need to remind you what is the final goal for smart lighting. Creating a convenient experience for users? Or building a comfortable living environment? Both are right, but too small. In my point of view is creating a smart city or to make a bigger aspect, building a smart planet. I know that it sounds crazy, tut dreams always have to be, so that we can push forward, right?

We all know people and goods free movement is the important part in the city, but different city have different conditions. For example, in some cities the traffic jams only happened in the rush hour, and in other cities it seems that never stop. Although the intensity in transportation is not the same in every area, but the requirement for cities people is always the same. No matter what city we are in, when you are driving on the road or just waiting the traffic lights behind the zebra crossing, we want the same thing : smooth traffic condition. I have to say we are luckily can live in the technology fast developing society, the traffic problem can be solve with the technical help. With the development of new sensor applications which are installing with the streetlamp, traffic flow can get into a new level. Nowadays, our city can crate a safe and inclusive transport experiences by using ICT and internet as pilots. By applying more and more sensors to integrate the smart city lighting system, so that cities can improve the roads and traffic conditions more efficiently by transportation monitoring and management.

Traffic jam on the road already made a big impact on the environment and life quality. This problem would not disappear naturally, normal government choose to rebuild the road to raise the driving capacity. But it is very expensive, and usually impossible in density populated area. Of cause, a better choice is to encouraging the driver to choose another route which is alternative. But it is also not possible without think over the existing traffic situation. So I want to introduce a useful way to solve this problem which is very popular in mainland map applications. The 'real time map', which is a sensor solution based on monitoring traffic density and shows the timely data to drivers on the map application. By using this 'real time map' you could enjoy the following benefits: (1) Stay information: Keep your eyes on the road and make some decisions based on timely data. (2) Ease traffic: For many people, going out is a daily activity.Citizens are encouraged to choose the routes and times are in smooth condition by telling them about the real situation of transportation. (3) Collecting data: The accumulated data can be statistically analyzed to better understand road conditions and traffic in the year. (4) Plan roadworks

By analyzing the 'real time map', it is possible to predict the location of roads and time that need to be maintained mostly.

At last I want to talk about probability on this special map in traffic:

(1) Improve and perfect the traffic flow

For example, with the help of streetlamp monitors when coordinating a series or on a large straight line of

traffic lights on the same road turning into green, we can create a so-called "green flow" which can allow this group of cars to pass so that these cars do not need to stop at an intersection. In this way, cities can deal with more load on traffic condition and also reduce the energy consumption. According to the lesson PHYS7420, we know that if cars take a break so frequently, It would cost a lot of energy compared to continue driving. And this idea is not just on the paper, it's possible. The technical worker just need to make a collection of the traffic data from the sensors on the streetlamp so that it can be integrated on top of the lights along the road to adjust the traffic light as I said.

(2) Analyze and help

The detecting sensors on the streetlamp shows the infinity probability on traffic analyze and management. When the traffic accident happen, the sensor can detect the location which cause the traffic slowdown and disruption. When these information are detected by the sensor, it would send the information the traffic management center and also sent out a warning by the 'real time map' to drivers so that these drivers can choose the alternative route in time. At the same time, an ambulance or emergency services can be called based on the information collecting by the sensors on the streetlamp.

(3) Improve working conditions and save lives

We all know that the traditional traffic management system rely too much on the workers. What a pity, it is also a dangerous work. Because traffic police or traffic controlling worker need to work in different weather conditions whatever in hot or cold days and even at midnight you still have chance to see them working in their position. So it's also have a relatively higher probability to knocked down by cars. Even though these dangers make them work carefully, but accidents will always happen. Especially when constructing on the road, this possibility is bigger because the road becomes narrowed. So that's what I want to avoid, by using the technology and sensors on the streetlamp like I mentions, to reach the goal on reducing the casualties for these worker.

6 Conclusion

In addition to the application of smart lighting in outdoor smart cities as mentioned in the article, smart lighting can also be shown in smart home, and the current market response also shows that smart lighting is extremely excellent. And with the progress of science and technology, smart lighting, as mentioned in the article, will not only be lighting, but more fields of combination and utilization. Let's look forward to the bright and promising future of the smart lighting.

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Research on the Development of Housing Industrialization under the New Urbanization

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Abstract: Based on the national strategy of "new urbanization", from the perspective of urban and rural integration, industrial interaction, economy and intensification, this paper proposes to vigorously promote the industrialization planning of urban and rural housing based on SI system, do a good job in the production of building structural parts from the perspective of building industrialization, extend to the internal filling parts, and do a good job in the internal filling system from the perspective of housing industrialization. At the moment of "Rural Revitalization" strategy, we should first develop the SI system multi-storey industrialized housing to meet the needs of rural areas. At the same time, we put forward the development path of China's urban and rural housing industrialization.

Key words: Housing industrialization planning; Building industrialization and new urbanization

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1 Introduction

With the coming of state leaders represented by President Xi Jinping and Premier Li Keqiang, China's economic development mode has entered the "new normal". At the same time, China's real estate industry has become the pillar of the national economy. In order to transform it into a quality economic growth mode, the Chinese government has proposed to upgrade the industrial structure, and the development strategy of "new urbanization" should be implemented. The so-called "new urbanization" is characterized by the overall planning of urban and rural areas, the integration of urban and rural areas, industrial interaction, economy and intensive, ecological livable, and harmonious development. It is the coordinated development and mutual promotion of large, small and medium-sized cities, small towns, and new rural communities. The traditional construction production mode, which is almost manual, can not meet the requirements of the new national economic development mode. At the Forum on green construction and sustainable development in 2015, Zhou Fulin, academician of the Chinese Academy of engineering, said that at present, China's construction industrialization level is only 3% to 5%, while that of European and American countries has reached 75%. Compared with these countries, there is a big gap in the level of construction industrialization in China. On February 22, 2016, the CPC Central Committee and the State Council issued several opinions on Further Strengthening the management of urban planning and construction, which clearly pointed out that China should develop new construction methods, vigorously promote prefabricated buildings, and make prefabricated buildings account for 30% of new buildings within 10 years. In March 2018, the national development and Reform Commission interpreted the main focus of "new urbanization" after the 19th National Congress of the CPC as follows: Rural revitalization, characteristic town construction and network of large, medium and small cities. Under the background of urbanization development in the

new historical period, it is imperative to explore the path of urban and rural housing industrialization.

2 The necessity of top-level design for the development of housing industrialization

The meaning of housing industrialization is to use the way of industrial production to produce housing, in order to improve the labor productivity of housing production and reduce costs[1]. There is a close relationship between housing industrialization and construction industrialization. Construction industrialization refers to the process of transforming the construction industry from handicraft production to socialized production. Its basic ways are building standardization, factory production of components and fittings, construction mechanization and scientific organization and management, and gradually adopt new achievements of modern science and technology, so as to improve labor productivity, speed up construction, reduce project cost and improve project quality.

2.1 Status of housing industry in China's construction industry

The construction industry includes housing industry, factories and buildings, commercial and service housing, office housing, scientific research, education and medical housing, etc. In 2019, according to the composition of the completed area of construction enterprises in China, the completed area of residential buildings accounts for 67.36%; The completed area of factories and buildings accounted for 12.2%; The completed areas of commercial and service buildings and office buildings accounted for 7.11% and 4.77% respectively; The completed area of other types of houses accounts for less than 5% (Figure 1), so the main component of building industrialization is housing industrialization.

Figure 1. Composition of completed area of buildings of national construction enterprises in 2019

Data source: Statistics and analysis data of Ministry of Housing and Urban-Rural Development

2.2 The current situation of housing industrialization in China

At present, the main production mode of China's housing industry is still backward manual production mode. Although it also has the application of modern industrial equipment, it consumes a lot of energy, raw materials and human resources, and the overall production efficiency is not high.

There are also large-scale pilot construction units in China, such as Yuanda housing engineering and Shenzhen Vanke, as shown in Table 1.

Table 1. List of major housing industrialization bases in China

Serial Number	Type	Name	Remarks
1	Comprehensive urban pilot	Shenzhen Municipal People's Government	
2		Shenyang Municipal People's Government	
3		Jinan Municipal People's Government	
4	Government led Development of housing industry National Base	Hefei Economic and Technological Development Zone	
5		Huayuankou Economic Zone, Dalian	
6	Enterprise LED National base for housing industry	Beixin Group Building Materials Co., Ltd.	Steel structure
7		Qingdao Haier Group	Furniture parts
8		Zhejiang Wenzhou Zhengtai Group	Residential electrical

	development	parts
9	Shandong linoret new energy Co., Ltd.	Solar energy in building integration
10	Changsha Yuanda Housing Industry Co., Ltd.	Comprehensive demonstration type
11	Vanke Enterprise Co., Ltd.	Real estate as the core business
12	Nanjing Qixia Construction Co., Ltd.	Take the development enterprise as the leader
13	Zhejiang Shaoxing Baoye Group Co., Ltd.	Comprehensive type
14	Heilongjiang Construction Group Co., Ltd.	Building construction
15	Shandong Yantai Wanhua Industrial Group Co., Ltd.	Polymer products
16	Tianjin Housing Construction Development Group Co., Ltd.	Production of new building materials
17	Heilongjiang Yuhui Construction Group	Building construction
18	Guangzhou Panasonic air conditioning electric appliance Co., Ltd.	Air conditioning products
19	Shenzhen Jiada hi tech Industrial Development Co., Ltd.	High tech
20	Zhejiang Hangxiao Steel Structure Co., Ltd.	steel structure
21	Beijing Jinyu Group Co., Ltd.	From building materials to comprehensive
22	Jiangsu Xincheng Real Estate Co., Ltd.	Real estate development
23	Jiangsu Haimen Zhongnan Holding Group Co., Ltd.	Comprehensive type
24	Weifang Guojian Gaochuang Technology Co., Ltd.	Thermal energy saving and high technology
25	Xi'an Jianshe Industrial Co., Ltd.	Prefabricated concrete structure

2.3 Problems with the development of housing industrialization in China

The development of housing industrialization in China has been explored for more than 20 years, and some progress

has been made in the field of prefabricated housing, but there are still some shortcomings.

2.3.1 The pilot enterprises lack of industrial residential product line planning

The state has carried out the pilot project of building industrialization in the past 20 years, but there is no clear plan for the development of housing industrialization. Therefore, the products of these enterprises are lack of unified planning, and there are phenomena of repeated construction and product features are not prominent. In the pilot project of prefabricated housing, prefabricated concrete structure is the main one. There are few residential projects of steel structure and light steel structure. Compared with the traditional residential construction, it lacks competitive advantage.

2.3.2 The industry standard is not perfect enough

Due to the rapid development of China's real estate industry, it seems that we can't wait for the pace of housing industrialization. Therefore, the pilot project of housing industrialization has become an exception rather than the traditional way of building houses. Many pilot enterprises seem to be taking a non-standard road, mainly in the following aspects:

2.3.2.1 There is no modular design standard

The mould of precast concrete structure needs to be made according to the architectural design scheme. If the architectural design scheme also adopts the non modular approach, the production cost of the project mould will be relatively high, which can not reflect the cost advantage of mass production[2].

2.3.2.2 Lack of production cost quota standard

At present, the national engineering cost quota standard of prefabricated structure has not been introduced, and only a few places in the industry, such as Liaoning province, have the quota of prefabricated concrete components, which can not reflect the regional differences. When enterprises participate in bidding, the quotation basis is insufficient.

2.3.3 The scale cost advantage can not be reflected

At present, there is a misunderstanding about housing industrialization in China: housing industrialization = prefabricated housing. In this sense, as long as there are a few prefabricated residential factories, the housing industrialization can be realized. As a result, a few prefabricated construction enterprises try to take on the important task of housing industrialization. There is no housing industrialization pattern led by several large enterprises and followed by many small and medium-sized enterprises. Therefore, the lack of industrial scale leads to the price advantage of prefabricated housing, and the market recognition of it is not so high. According to Liu Haoqiang, chief engineer of Xi'an Construction Co., Ltd., which produced the the prefabricated concrete structure residential buildings produced, under the current production capacity, the breakeven point of the enterprise requires the project construction area to reach 300000 square meters. If the project quantity is lower than this value, it will not be profitable. The fundamental reason is that all components of enterprises need to be produced by themselves, the cost can not be reduced, and there is no scale advantage of industrial cluster for division of labor and collaborative production, so the order projects undertaken are very limited, as shown in Figure 2, which illustrates the misunderstanding of China's housing industrialization development.

Figure 2. The misunderstanding of housing industrialization in China

3 Analysis on the development of housing industrialization under the new urbanization

The housing industrialization promotion center of the Ministry of Housing and Urban-Rural Development has undertaken the project of housing industrialization planning during the 12th Five Year Plan period. The housing industry should be based on the domestic market. In the future, it will mainly promote prefabricated housing in the field of affordable housing, and has also established 20 major pilot cities[3]. However, under the national strategy of "new urbanization", this orientation needs to be reexamined.

3.1 Top level design of housing industrialization development

Throughout the top-level design of housing industrialization in Europe, America, Japan and other developed countries, the so-called prefabricated building system of SI (skeleton and infill) support and filler is implemented. Among them, the support is firm and durable, which solves the service life problem of housing; The filling body can be disassembled to solve the problem of function update. Therefore, the top-level design of housing industrialization in China should first classify the building structure (S) and infill (I) into industrialization. Large construction groups take the route of industrialization of building structure parts, and small and medium-sized home furnishing enterprises take the route of industrialization of internal filling parts. Their integration point lies in the establishment and promotion of national SI standard system. As shown in Figure 3, a house is decomposed according to the idea of SI system. The SI structure system here is not a simple split of traditional brick concrete structure or concrete frame structure. It should be under the new modular SI system standard formulated by the state, the structure (S) and filler (I) can be separated to form their own parts under the two systems. Many small and medium-sized manufacturers can carry out standardized production for the same type of parts of each type of system, and the same type of parts of different manufacturers can be exchanged.

3.2 The breakthrough point of housing industrialization -- multi storey SI system housing

According to the number of floors, the residence can be roughly divided into multi-storey residence and high-rise residence. Because of the low floor and relatively small load, the difficulty of design and construction of multi-storey residence is low, while that of high-rise building is on the contrary. At present, many rural villagers self built multi-storey brick concrete structure houses.

Figure 3. Schematic diagram of SI building system

The house doesn't even have drawings, which shows this. Therefore, the industrialization of housing based on SI system is implemented from multi-storey building, which is easier to realize industrialization production.

3.2.1 The relationship between the number of residential floors and the type of building structure

Due to historical reasons, the types of building structures in China are influenced by the former Soviet Union. In the field of housing, the main relationship between floors and building structures is shown in Table 2[5].

Table 2. Traditional residential structure and floor relationship in China

Residence Arrangement	Below 7th Floor	7 / F 24 / F	Above 24 Floors
Structure type	Brick mixed structure	Concrete shear wall structure	Concrete shear wall structure
	Concrete frame structure	Concrete frame structure	Concrete steel mixed structure
Main characteristic	Manual production, soil consumption, low cost, no energy saving and environmental protection	Manual production, high cost, no energy saving and environmental protection	Manual production The cost is high No energy saving and environmental protection
	Manual production, moderate cost, environmental pollution	Manual production, moderate cost, environmental pollution	Manual production The cost is high No energy saving and environmental protection

With China's reform and opening up and the pilot development of housing industrialization, the relationship between prefabricated residential floor and building structure is shown in Table 3.

Table 3. Structure and floor relationship of prefabricated house

Residence Arrangement	Below 7th floor	7 / F 24 / F	Above 24 floors
Structure type	Prefabricated timber structure	Fabricated steel structure	Fabricated steel structure
	Prefabricated Light steel structure	Prefabricated type Concrete structure (PC)	Prefabricated type Concrete structure (PC)
	Prefabricated concrete structure (PC)		
Main characteristic	Environmental protection and wood consumption High cost	Environmental protection High cost	Environmental protection High cost
	Environmental protection High cost	Environmental protection High cost	Environmental protection High cost
	Environmental protection High cost		

It can be seen that the traditional residential structure has the advantage of lower cost compared with the prefabricated housing, but its main disadvantages are large resource consumption, low production efficiency and environmental protection. The prefabricated housing mainly has higher cost, but high production efficiency, energy saving and environmental protection. One of the fundamental reasons for the high cost of prefabricated houses is that there is no real industrialization and a small number of production enterprises, mainly because some medium-sized pilot enterprises are doing all-round production of prefabricated houses, and many small and medium-sized enterprise clusters with division of labor are not formed. If such a prefabricated residential enterprise is compared to an automobile manufacturing enterprise, even the headlamp, tire, engine, gearbox and other parts are all produced by itself, then the price of the whole vehicle can not be reduced[6].

3.2.2 The necessity of developing multi-storey residential industrialization based on SI System

In recent years, the completed area of urban and rural housing in China is shown in Table 4. According to Table 4, rural housing demand accounts for nearly 40% of the total social housing demand.

Table 4. Completed area of urban and rural housing in 2012-2016 (10000 square meters)

Particular year	2016	2015	2014	2013	2012
Countryside peasant household	73051.42	79380.2	83769.59	85952.98	87775.93
Whole Sociology	171471.3	179737.8	192545.1	193328.5	195102.9

Data source: National Bureau of Statistics (2017 Statistical Yearbook

Because the rural land is not so scarce compared with the city, the majority of rural houses are houses with less than 7 floors, which determines that the implementation of housing industrialization based on SI System in China should mainly consider the low rise prefabricated housing structure type, and from the economic point of view, the prefabricated light steel structure residence based on SI system should be mainly developed (Figure 4).

Figure 4. Schematic diagram of the difficulty of implementing SI building system in urban and rural areas

Due to the shortage of urban land, the city mainly considers the high-rise prefabricated buildings with more than 7 floors, and should mainly develop the high-rise prefabricated concrete prefabricated residence and prefabricated steel structure residence based on SI system[7].

3.3 Cost perspective of housing industrialization development

In the "new urbanization" development mode, "rural revitalization" has become the focus of development after the 19th National Congress of the CPC. Therefore, the development of housing industrialization should first consider the low floor prefabricated houses. At the same time, in order to obtain the recognition of the demand side of the housing market, prefabricated housing needs to have advantages over the existing building structure types in terms of cost and cost.

3.3.1 National SI system housing standard and industrialized housing cost

According to the experience of housing industrialization in Japan, in order to reduce the construction cost of industrial housing and prolong the service life of housing, at the beginning of the top-level design of housing industrialization, the so-called SI system prefabricated building standard is implemented; Among them, the support body is strong and durable, which can solve the service life problem of the residence (up to 100-200 years); The filler can be disassembled to solve the problem of function update (30 years).

In 2006, China began to introduce SI residential structure system, which is restricted by the traditional architectural design and production mode. In addition, the real estate industry is eager to speed up the project, so the promotion effect is not ideal. Under the development mode of "new urbanization" and "rural revitalization", it is necessary to reexamine the advantages of SI building structure system, and timely introduce the SI standard system of multi-storey housing for the implementation of small and medium-sized production enterprises[8].

From the perspective of the implementation standards of prefabricated building pilot enterprises, there are American standards, European standards and Japanese standards. If the standards are not unified and all parts of the enterprise are produced by themselves, the construction cost of such prefabricated houses will be high, and the market price will have no advantage. Therefore, it is necessary to introduce the SI standard system of multi-storey residence in China.

3.3.2 It is difficult to implement SI structure system in multi-storey residential buildings

With the idea of SI structure system, the standardization of prefabricated housing is easy to implement. Compared with high-rise buildings, multi-storey residential buildings with less than seven floors are easier to implement, combined with the "new urbanization" development strategy of "rural revitalization, characteristic town construction and large and medium-sized city network". First of all, the standardization of SI construction should be carried out in the multi-storey residential buildings of low rise building type. From the perspective of structural type, the development of steel structure based support and wall system that many manufacturers can participate in is the direction of housing industrialization development in China.

3.3.3 Foreign SI system multi-storey residential industrialization development is mature

Japan and some European and American countries already have mature production system and industrial chain of industrialized multi-storey residential parts based on SI system. Because the government has formulated a relatively strict SI standardization system, the SI parts of different enterprises can be exchanged. At the same time, because a large number of enterprises participate in the production of the same type of parts, the advantages of residential industrialization become obvious, and the residential construction cost is greatly reduced, making its production and sales form a virtuous circle. For example, in these countries, the purchase of multi-storey houses is as convenient as furniture, with a wide range of products and many choices for residents. Even the owners can do it yourself. There is a virtuous circle interaction between housing demand and housing supply. Housing industry has really become a stable pillar industry of national economic development[9].

4 The development path of housing industrialization under the strategy of "Rural Revitalization"

After the 19th National Congress of the Communist Party of China:"New urbanization" mainly focuses on "rural revitalization, characteristic town construction and network of large, medium and small cities". As an old saying goes, "live in peace and work happily", for the strategy of "rural revitalization", in order to achieve the revitalization of rural characteristic agricultural industry, we must first have a good living environment to attract people who develop rural characteristic industries[10]. In the new historical period, to realize the dream of ecological and livable "beautiful countryside", we need to realize the development of urban and rural housing industrialization from the following steps.

4.1 The standard department should formulate SI national standard for multi-storey residential buildings as soon as possible

Throughout the technology source and standard system adopted by the pilot enterprises of housing industrialization, different enterprises have different technical background and standards. Due to the different technologies and standards among enterprises, it is impossible to form a residential industrialization pattern with interchangeable parts. This is also one of the reasons why housing industrialization is simply equivalent to prefabricated housing in China. Therefore, it is necessary to introduce the design standard of housing industrialization in China based on SI system as soon as possible. This standard should start with multi-storey residential buildings which are relatively easy to realize, and be jointly formulated by the Ministry of Housing and Urban-Rural Development, the Standardization Administration and China Architecture Design & Research Group.

4.1.1 Type and modulus of domestic industrialized residential structure (s)

4.1.1.1 Residential steel structure (s) system

The steel frame system has the advantages of small section, high strength, easy processing and easy installation. Therefore, the steel frame system should be the first choice in the selection of residential structure. For the standardization of the connection between structural components, considering the detachability of prefabricated housing, the connection forms should be bolt connection, hanging connection, plug-in and other forms, unless the above connection methods are not available and the welding method is adopted[11].

4.1.1.2 Residential concrete structure (s) system

The residential concrete structure (s) system is a mould casting concrete structure component, which has the advantages of low cost and easy modularization, but the disadvantage is that the section size of the component is larger than that of the steel structure. Residential concrete structural members also need to consider their own structural system (s) and the split connection mode with the internal filling system (I).

4.1.2 Type and module of domestic industrial residential interior (I)

The interior decoration of industrialized residence (I) is mainly composed of interior and exterior walls, door and window system, integral kitchen and bathroom, equipment and pipeline system.

4.1.2.1 Interior and exterior wall system of multi story residence

The internal and external wall system is mainly connected with the structure by standardized connection mode. In addition, the external wall should consider the integration of external wall facing layer, insulation layer and interior facing layer, as well as the connection with windows; The interior wall mainly considers the integration with the facing layer and the connection of the door.

4.1.2.2 Integrated kitchen and bathroom system

The kitchen and toilet should be the integrated kitchen and toilet unit, and then the integration and connection of water supply and drainage, heating and ventilation, strong and weak power pipeline system should be considered.

4.1.2.3 Equipment pipeline system

From the perspective of specialty division, the equipment pipeline system should include water supply and drainage, heating and ventilation, strong and weak power pipeline system, and the pipeline system space should be centralized to facilitate maintenance.

4.2 Upgrading of traditional residential Enterprises

After the introduction of the national standard based on SI system, the traditional housing industry related enterprises can upgrade the housing industrialization production according to their own technology and advantages.

4.2.1 Large steel structure construction enterprises

Large scale steel structure manufacturing enterprises have the advantages of advanced equipment, strong technical force and abundant funds. After the introduction of the national SI system steel structure housing standard, they should do a good job in product research and development. They should be the main suppliers of the steel structure (s) part of multi-storey residential buildings[12].

4.2.2 Large concrete structure construction enterprises

These enterprises are mainly composed of prefabricated concrete production enterprises, large-scale concrete component factories and commercial concrete companies, which can produce multi-storey residential concrete structure products based on SI system.

4.2.3 Small and medium-sized building wall material manufacturers

In the past, such enterprises only produced a single wall material. Under the demand of finished filling parts, they need to reorganize and jointly develop and produce filling parts that meet Si national standards.

4.2.4 Enterprises of kitchen and bathroom related products

In the past, such enterprises also produced single or multiple products in the field of kitchen and bathroom equipment, which may not be able to produce highly integrated kitchens and toilets. Therefore, they also need to jointly restructure and develop integrated kitchens and toilets in line with Si standard system[13].

4.3 The role of the government in the upgrading of traditional residential enterprises

In the whole process of upgrading traditional residential enterprises, the government should mainly do a good job in supervision and service.

4.3.1 Government supervision in the upgrading process of traditional housing related enterprises

(1) Formulate policies and decrees for enterprise upgrading and transformation

From the perspective of sustainable development, we should resolutely shut down the old polluting enterprises related to residential production, limit the backward production capacity enterprises, and encourage the creation and restructuring of new residential enterprises.

(2) Carry out regulatory responsibilities in strict accordance with policies and decrees

As the external driving force of enterprise transformation and upgrading, strict management of enterprise upgrading and transformation in accordance with the law is conducive to the healthy and orderly development of the housing industry towards the direction of new housing industrialization.

4.3.2 Do a good job in the information service of traditional housing industrialization upgrading

In the process of upgrading the traditional housing industry related enterprises, the government should also do a good job in the relevant information services, information platform construction, and guide enterprises to the government's established direction of transformation, reorganization and merger. Under the policy guidance of "rural revitalization, characteristic towns, large and medium-sized cities networking", the goal of housing industrialization in China will be realized (as shown in Figure 5, it shows the development path of housing industrialization based on Si System in China).

Figure 5. Development of urban and rural housing industrialization based on SI system

5 Conclusion

In the current situation of China's economic development, industrial structure adjustment and industrial upgrading are imperative. "Rural revitalization, characteristic town construction and network of large, medium and small cities" under "new urbanization" is China's national development strategy in the new historical period[14]. If we want to achieve the social goals of urban and rural overall planning, urban and rural integration, industrial interaction, conservation and intensive, ecological livable and harmonious development. With the accumulation of nearly 20 years of residential industrialization pilot experience, the development of multi-storey residential industrialization based on SI national standard system should be taken as the breakthrough point. Large construction groups should start from the industrial residential structure (S) part and expand to the internal filling (I) part. Small and medium-sized home furnishing enterprises should make the filling (I) part well. As far as possible to the multi-storey residential structure system (S) part of the extension, truly achieve a few residential. The housing industrialization development pattern is dominated by large enterprises in the production of industrial parts and participated by many small and medium-sized enterprises in the production of industrial parts of housing. The core of all this is to do a good job in the top-level development planning of housing industrialization.

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Analysis of the Relationship Between Railway and Highway Transportation and China's Economic Development

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Abstract: China has a vast land area and frequent interconnections between various regions. China's transportation industry is faced with tremendous pressure. This article combines China's railway and highway transportation conditions to predict China's economic development, uses stepwise regression to screen explanatory variables, and finally determines railway passenger turnover, road freight volume and passenger car ownership as the explanatory variables, and GDP as the dependent variable, and also analyzes China's economic development by establishing a multiple regression model.

Key words: Rail transport; Road transport; Multiple linear regression model; Stepwise regression

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1 Introduction

China has a vast land area, and different regions have their own unique resources and industries. China's transportation is particularly important. At present, both passenger and freight transportation in China are still dominated by road and rail transportation. Therefore, this article explores the relationship between transportation and China's economic development based on the data of railway transportation and road transportation[1].

2 Regression analysis of road transportation, railway transportation and national economic development

The multiple linear regression model determines the relationship between the dependent variable Y and the independent variable X and establishes a linear regression equation containing independent variable parameters and disturbance terms to predict the dependent variable[2]. The regression model is set as follows:

$$Y = \beta_0 + \beta_0 X_1 + \beta_2 X_2 + \cdots + \beta_i X_i + \varepsilon \quad (1)$$

In the above formula, Y represents the dependent variable, β_i is the undetermined parameter, X_i is the selected explanatory variable, and ε is the model disturbance factor. After removing the three variables that are weakly correlated with GDP, this article applies stepwise regression analysis method to analyze the relationship between GDP and the remaining influencing factors, selecting the significant effect factors as independent variables, and establishing the optimal regression equation. Then use the optimal regression equation for regression analysis to determine the degree of relationship between the influence factors and the dependent variable, the results shown in Table 1.

Table 1. Regression model estimation

	Model(1)	Model(2)	Model(3)
Railway passenger turnover	83.76***	64.97***	39.47***
	(40.58)	(7.77)	(6.95)
Bus ownership		4.47**	5.50***
		(1.80)	(1.08)

Road freight			0.07*** (4.87)
C	-312040.6*** (-16.20)	-375925.7*** (-12.34)	-358596.1*** (-1.51)
Adj.R^2	0.9922	0.9948	0.9984
DW Statistics	1.1566	0.9912	1.6981

Note: ***, **, * represent significant at the level of 1%, 5%, and 10%

Finally build the model:

$$GDP = -358596.1 + 39.47483X_7 + 5.495889X_{12} + 0.066020X_6 \quad (2)$$

(-19.62478) (5.676824) (5.082515) (4.865948)

R^2=0.998358 F=2229.729 DW=1.698107

According to the model, it can be seen that when railway passenger turnover increases by 100 million passengers per kilometer, China's GDP will rise by 3.947483 billion yuan; when the number of passenger cars increases by 10,000, China's GDP will rise by 5.495889 billion. When the road freight volume increases by 10,000 tons, China's gross national product will rise by 60602 million yuan.

3 Analysis of transport intensity

Transportation intensity refers to the transportation passenger and cargo conversion turnover in a certain period of time to the gross national product of the same period. It is a commonly used analysis index reflecting the relationship between transportation and economic development.

The calculation formula of transportation intensity is:

$$Transport\ intensity = \frac{Transportation\ passenger\ and\ cargo\ conversion\ turnover}{GDP} \quad (3)$$

According to the data of China's gross national income, railway passenger turnover, and railway freight turnover from 2003 to 2017, the transportation intensity is calculated. The annual change trend of transportation intensity is shown in Figure 1.

Figure 1. Transportation intensity change trend chart

According to the change trend of transportation intensity in Figure 1, it can be found that from 2003 to 2018, China's railway passenger and freight transportation intensity has maintained a downward trend. The reason for this phenomenon is partly due to the vigorous development of various industries in China. The industrial structure of China has gradually become complete, and the shortage of resources has gradually declined, shortening the transportation distance between production areas and processing areas. On the other hand, with the continuous economic development of China in recent years, the transportation structure is gradually improving. Part of the pressure on railway passenger and freight is shared by road, water and air transportation, which also makes the intensity of railway passenger and freight gradually decline.

4 Transportation elasticity analysis

Transportation elasticity is the transportation elasticity coefficient obtained from the ratio between the growth rate of each transportation index involved in this article and the growth rate of the gross national economy to judge the relationship between transportation and the national economy. Suppose E_1 is the elasticity of road freight volume, E_2 is the elasticity of passenger car ownership, E_3 is the elasticity of railway passenger turnover; r_1 is the growth rate of road transportation freight volume, r_2 is the growth rate of

passenger car ownership, r_3 is the growth rate of railway transportation turnover, R Is the GDP growth rate.

$$E_i = \frac{r_i}{R} \quad (4)$$

Based on China's 2003~2018 GDP growth rate, railway transportation turnover growth rate, passenger car ownership growth rate and road freight volume growth rate, the elasticity coefficient is calculated according to formula (4), and the results are shown in Figure 2.

Figure 2. Elastic change trend graphs

4.1 Analysis on the changing trend of the elastic coefficient of railway passenger turnover

From the perspective of the elasticity coefficient of railway passenger turnover, E_3 in 2004 and 2014 were both greater than 1, indicating that the growth rate of railway passenger turnover in that year was greater than that of GDP, and the railway passenger turnover promoted China's economic development. The elasticity coefficient of railway passenger turnover in other years is between 0 and 1, indicating that the growth rate of railway passenger turnover is less than that of GDP, relative to the change in GDP, the railway passenger turnover change slightly.

4.2 Analysis on the change trend of the elastic coefficient of passenger car ownership

From the perspective of the change trend of the elasticity coefficient of passenger car ownership, the elasticity coefficient of passenger car ownership in 2009 and 2015 was greater than 1, indicating that in these two years, the growth rate of passenger car ownership was greater than the growth rate of GDP, and the growth rate of passenger car ownership Can promote the development of China's economy. Take 2009 as an example. After experiencing the subprime mortgage crisis in 2008, China introduced numerous fiscal and monetary policies to support the development of the domestic economy. The changing trend of the elastic coefficient of passenger car ownership also reflects the effectiveness of China's macro-control policies.

5 Analysis on the changing trend of the elastic coefficient of road freight transport

From the perspective of the elasticity coefficient of road freight, except for 2009, 2012 and 2017, the elasticity coefficient of road freight is between 0 and 1, which is inelastic, indicating that the growth rate of GDP is greater than that of road freight transportation. Changes in freight transportation caused by GDP changes are relatively small. For the three years of 2009, 2012 and 2017, the elasticity coefficient of road freight is greater than 1, indicating that the development of road freight has driven the overall social and economic development of China.

6 Conclusion

Compared with other factors, railway passenger turnover (X_7), road freight volume (X_6) and passenger car ownership (X_{12}) are more significant in promoting China's economic development. Continuing to improve the railway and highway transportation network can promote the development of China's economy, which is one of the important factors influencing the steady growth of China's economy[3].

In terms of suggestions, a systematic railway and road transportation network should be established first. From the perspective of the changing trend of railway passenger turnover and road freight volume, railway passenger transportation and road freight transportation have a high degree of impact on China's economic development. Most of China's materials are transported by road, but China's road transportation system still needs to be improved. Good road conditions and lower highway tolls can save freight time and freight costs. At the same time, it can also share the freight pressure of the railway system, so that the development of the two modes of transportation will be announced and promote China's economic growth.

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The Application of Herzberg's Two-Factor Theory in Management -- Taking Huawei and Lenovo as Examples

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Abstract: The report mainly shows the methods of Huawei and Lenovo's managers to manage the organizations to achieve goals. First, it gives the overviews of Huawei and Lenovo which are two of the largest communication devices manufacturers, provides a departmental structure. Second, it simply explains the meaning of management and management personnel in this report. Then, it analyzes Two-Factor Theory. It provides their successful cases with using Two-Factor Theory. Finally, it provides a conclusion of similarities and differences between them and offers recommendations.

Key words: Huawei; Lenovo; Organization; Company

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1 Introduction

1.1 Purpose of the report

The purpose of this report is to find ways that the managers who come from Huawei and Lenovo can effectively manage workplace relationships and produce a desired result. The report describes the methods of how to build standards of performance and strategies to achieve organization's goals, responsibilities of both managers and employees. Also, it describes the theory and usage of motivation in Huawei and Lenovo. Finally, it provides a conclusion of similarities and differences between two organizations, and it provides recommendations regarding best practice for organizations to operate better.

1.2 Methodology

The methodology of this report mainly uses secondary data, which come from websites, books and database.

1.3 Overview of Huawei

Huawei is a provider of information and communication technology (ICT) infrastructure and intelligent equipment. Huawei has its own suppliers all over the world. Its customers are mainly major electronic communication companies, schools, research institutes, etc. Huawei's vision is 'Building a Fully Connected, Intelligent World'. Huawei's mission is 'to focus on the challenges and pressures of customers' attention, provide competitive communication solutions and services, and continue to create the maximum value for customers'. The organization structure is showed in Figure 1[1].

Figure 1. Organization structure of Huawei

1.4 Overview of Lenovo

Lenovo is a large IT company in China. Lenovo mainly produces computers, TVs, servers, and other products. Lenovo's vision is 'creating personal devices that more people are inspired to own, a culture where more people aspire to join and an enduring, trusted business that is well respected around the world'. Their mission is to 'become one of the world's greatest personal technology companies'. Lenovo's organizational structure has undergone many changes, and now it adopts the "aircraft carrier" organizational structure, the organization structure is showed in Figure 2[2].

Figure 2. Organization structure of Lenovo

2 Findings & analysis

2.1 What managers do?

Managers need to optimize the management process, establish management systems and standards, use charts, performance appraisal and other management tools to complete the tasks and finally evaluate the matters and decisions of the enterprise. Furthermore, they should also carry out the four major functions of management which are planning, organizing, leading and controlling.

Organizations can take five ways to achieve organizational goals. They are stimulating the innovation of the organization, adhering to sustainable development. Then, it is crisis and risk management with improving the quality of work and life of employees and establishing a learning organization.

A successful manager needs have three key managerial skills, including technical skills, interpersonal skills and conceptual skills. Technical skills mean that the professional knowledge or skills in a specific field that employees need to skillfully and accurately complete the work. For frontline managers, technical skills are more important than others. Interpersonal skills involve the ability to communicate well with others, which can coordinate the relationship between the members, make the members get along well and make the team more cohesive. Then, conceptual skills refer to manager transform abstract, complex concepts or situations into concrete and enforceable states and use these capabilities to view the organization as a whole and understand the relationship of subunit.

2.2 Management employee relationship -- What motivates?

2.2.1 Two-factor theory of motivation in detail

Herzberg's two-factor theory points out the factors that affect employees' job dissatisfaction and satisfaction and divides these factors into Hygiene factors and motivator factors. Hygiene factors include company policy and management, salary and working conditions, etc. These are negative external factors about work, Hygiene factors will not bring long-term satisfaction. However, if the organization does not provide them with these factors, employees will be dissatisfied. In other words, Hygiene factors refer to those that can appease employees and reduce dissatisfaction. Motivator factors include recognition, achievement, and responsibility, etc. These factors are related to the employees' positive emotions towards the work content. Motivator factors are related to the work content itself and can produce satisfaction, it generally reflects the psychological needs of employees and is an intrinsic factor. It inspires employees to pursue outstanding performance.

According to Herzberg's theory, satisfaction and dissatisfaction affected by these two kinds of factors can exist at the same time. That is means that Hygiene factors inhibit employee dissatisfaction, while motivator factors help improve satisfaction. A person can feel satisfaction and dissatisfaction at the same time. Therefore, Hygiene factors and motivator factors do not affect each other. For example, eliminating employee does not necessarily mean that employees will be satisfied and vice versa. Additionally, in an organization, if leaders focus on eliminating unsatisfactory work factors, it may bring peace, but not necessarily improve performance.

Herzberg's two factor theory also has limitations. Firstly, when things go well, people tend to see what they enjoy to work for. However, when things get worse, they tend to blame external factors. This situation will affect Herzberg's experimental results, thus reducing the credibility of the theory. Second, the two-factor theory holds that employees' job satisfaction will affect productivity. However, Herzberg does not explain this relationship, and there are other external factors that affect productivity.

Although the theory is not perfect, the two-factor theory can still provide managers with many ideas to motivate employees. In the application of this theory, managers use two-stage process to motivate people. First, managers need to eliminate the dissatisfaction of employees. For example, ensure effective supervision, pay salaries honestly, and provide job security. Second, when dissatisfaction disappears, managers need to help them find a place of satisfaction. For example, providing development opportunities, recognizing people's contributions, and providing training.

2.2.2 Huawei

Huawei has established a complete salary system to reduce employee dissatisfaction and attract new staffs in terms of Hygiene factors. Huawei uses high salary to attract more talents to take office. It is reported that in 2011, the starting salary of Huawei's new students is 5000-6000 RMB for undergraduates, this set of basic wage standard is in the forefront in the same industry and even in the market[3]. Huawei's high salary raise will attract many excellent talents, and meet the most basic requirements of employees for work.

Employees' dissatisfaction caused by high pressure work is reduced due to their higher salary than that of the same industry.

Huawei established of honor department, which have improved employee satisfaction from the perspective of motivators and retain high quality staffs. Huawei has set up an honor department to enhance employees' sense of honor. Huawei has set up an honor department to assess and evaluate the work of employees, reward each employee's hard work, and at the same time, the department has also set up various forms of rewards, such as honor, training, career development incentive[4]. This will improve employee job satisfaction and encourage employees to contribute their own strength to the development of the company.

Refer to the responsibilities of employees, each employee of Huawei completes his team role, the manager also has a more active contact with employees through incentive system such as equity incentive, Huawei excellent job design promotes good performance. For example, in Huawei's equity incentive policy, the organization requires the types and quantities of shares that employees can subscribe for. Huawei will evaluate the roles of employees in the team. When the team is established, Huawei makes a clear roles' task for the team, then evaluate the performance of each role according to the results of the task[5]. Huawei's team role defines the responsibilities of employees, and Huawei's equity incentive policy encourages employees to actively perform their duties. Huawei well job design enables employees to work efficiently and pay more attention to organizational performance.

2.2.3 Levono

In terms of Hygiene factors, Lenovo provides good working environment for employees and attracts more people to work. Lenovo has a company canteen which provides free lunch for employees and dormitories for new employees who come from other places. It has developed rapidly and realized a high degree of office automation Meanwhile, it also provides home computers for employees who work at home, and sends them to employees' homes one by one[6]. Lenovo's working environment will attract a lot of graduates, and talents from other places to work in the enterprise, which can meet the basic needs of employees to do life, thus reducing job dissatisfaction.

In terms of motivator factors, Lenovo implements equity incentive policies, which improves employees' sense of responsibility and satisfaction, and enables employees to stay in the company for a long time to create profits for Lenovo. Lenovo provides internal stock for the company's managers, employees can purchase according to their own wishes, and sell it to Lenovo at the market price when they leave. Lenovo also provides a variety of forms of internal stock purchase, in addition to using cash on hand, employees can also subscription with bonus or interest free loan from the company[7]. Lenovo's equity incentive enables employees to pay more attention to the performance and long-term development of the enterprise, and enables employees to stay in the company for a long and feel satisfied with the results while working hard.

Refer to the team roles, Lenovo has more incentives for highly skilled employees, its strict and clear management system helps the organization well designed the job and improve performance. Lenovo defines the supervision system of managers and the supervision responsibility of employees in the employee manual[7]. These systems complement the lack of supervisory roles in Lenovo's team, at the same time, standardized system reduces the dissatisfaction of employees. Lenovo's well job design ensures the organization's centralized management of its employees and makes them work towards the organization's goals which can get good performance.

3 Conclusion and recommendations

In conclusion, the report explains Two-Factor Theory of Motivation of Huawei and Lenovo cases.

There are many similarities between them. To encourage employees to work hard, both leaders established reasonable compensation system and allocated shares. They emphasized efficiency and teamwork, so Huawei and Lenovo had made great achievements in Chinese market. Meanwhile, they had realized the importance of technology and innovation and recruited a group of capable employees for the organizations.

Also, there are many differences. Ren used military-style management, so Huawei attaches more importance to efficiency, rules and regulations. However, the team model in Huawei is more perfect than Lenovo's team model, and its members have more distinct roles. Lenovo's leaders delegate power to their subordinates and pay more attention to employees which are different from Huawei's centralized management.

To cope with the increasingly fierce competition of IT industry, Huawei should strengthen the research, develop core technologies and provide employees with benefits to

increase their satisfaction. After Liu's retirement, Lenovo should focus on the improvement of its leadership model and improve its incentive system continuously.

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Discussion on the Judgment of the Optional Capital Structure -- A Case Study of X Company

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Abstract: Optimization of capital structure has been a famous issue in Corporate Finance. It is essential for modern companies to find the optional capital structure of themselves because it could help these companies to reduce the cost of finance. This best structure is not easy to find out due to the complex determinants behind it. However, there still are some alternative ways could be used to judge whether a company reach its optional capital structure. This report takes X company as an example to discuss that how to use different efficient methods to estimate the optional capital structure of a company.

Keywords: Ratio analysis; Peer company comparison; Trade-off theory

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1 Introduction

Capital structure is important for companies in daily operation and increasingly concerned by managers. This report analyses the capital structure of X company by ratio analysis and compare this firm's capital structure with other companies in same industry. In addition, based on the comparation and optimal capital structure theories, we found X company is operating at its optimal capital structure and then analyses potential reasons.

2 The analysis of X's capital structure

2.1 Company overview

X is a New Zealand-based utility firm whose major businesses operated in Australia, New Zealand and the United States (Morning Star Data Analysis Premium Report, 2019). According to the company's annual report released in 2019, the operating revenue of X from infrastructure and utilities is $1276.77 million. Overall, the firm's total assets in 2019 is $ 6448.09 million and the total liabilities and equity in 2019 are $3818.71 million and $2629.38 million, respectively.

2.2 The capital structure of X

2.2.1 Data

According to Florackis and Ozkan(2009), book values are more accurate when analysing a financial structure because the volatility of book values are less than market values. As a result, book values on balance sheet and financial statements of X from 2015 to 2019 are used to analyse this firm's capital structure. In addition, MorningStar DatAnalysis database is used to collect financial data.

2.2.2 Methodology

Debt-to-equity ratio is used in this report to measure the capital structure of companies.

According to Michael (2015), debt-to-equity ratio compares a company's total liabilities with this company's total equity and this ratio is regarded as a good reflection of the capital structure of a firm because debt-to-equity ratio measures the proportion between equity and liabilities which are two major capital sources. In general, a high D/E ratio means the capital funding of a firm mainly from debt instead of equity, which could increase financial risk. However, the D/E ratios in different sectors are extremely different and utility industry is considered to have a relative higher debt-to-equity ratio compared with other sectors.

However, traditional debt-to-equity ratio (Total liabilities/Total equity) could not accurately measure the capital structure of a company. This is because capital structure mainly influenced by interest-bearing debt rather than total liabilities (Titman *et al*., 2011). As a result, this report makes an adjustment to debt-to-equity ratio, which means only interest-bearing debts are used to analyse the capital structure rather than total liabilities.

The formula of adjusted debt-to-equity ratio is:

$$DEBT - TO - EQUITY\ RATIO = \frac{Interest-bearing\ liabilities}{Total\ Shareholders'\ Equity} \quad (1)$$

2.2.3 Capital structure

Based on above-mentioned analysis, we calculate the debt-to-equity ratio of X from 2015 to 2019 and then plot the data (Table 1).

Table 1. Debt-to-equity ratio of X from 2015 to 2019

YEAR	Interest-bearing liabilities	Equity	Debt-to-equity ratio
2015	$ 2551.54 million	$ 2506.42 million	101.80%
2016	$ 2340.90 million	$ 2765.77 million	84.64%
2017	$ 2565.11 million	$ 2868.40 million	89.43%
2018	$ 2505.17 million	$ 2942.61 million	85.13%
2019	$ 2845.81 million	$ 2629.38 million	108.23%

Figure 1. Debt to equity ratio

This figure shows that over the past 5 years, D/E ratios of X keep a high and flat level in general. However, there are fluctuations shown in the chart and the D/E ratios in 2015 and 2019 are higher than the ratios in other 3 years (Figure 1).

3 The capital structure of other companies in the same industry

3.1 Data

According to Albuquerque (2009), in order to establish an ideal peer group, companies in the peer group should have similar size, financial constraints, sectors, business, markets, and diversification. Based on these characteristics, 4 electric utility companies Y, Z, W, and N are used to compare with X. In addition, the average data of these 4 companies are used as industry average to compared with X. Similarly, MorningStar database is used to collect data and adjusted D/E ratio is used to measure capital structure.

3.2 Capital structure

According to the D/E ratio formula and financial data gathered from MorningStar DatAnalysis database, D/E ratio of 4 companies from 2015 to 2019 are calculated and present in below table (Table 2).

Table 2. D/E ratio of 4 companies from 2015 to 2019

YEAR	Y	Z	W	N	AVERAGE	X
2015	35.27%	52.49%	55.19%	75.60%	54.64%	101.80%

2016	35.51%	45.81%	60.08%	46.99%	47.10%	84.64%
2017	33.46%	63.57%	55.03%	37.27%	47.33%	89.43%
2018	39.71%	64.00%	54.46%	141.71%	74.97%	85.13%
2019	34.86%	59.97%	39.40%	46.05%	45.07%	108.23%

Figure 2. The comparation of D/E ratio

In general, above figure shows that the trend of different company's D/E ratio is flat expect N and most companies have similar D/E ratio. Compared X with other companies and industry average, the D/E ratio of X is higher than the industry average and other companies. This means X has a higher debt level than other companies (Figure 2).

4 Optimal capital structure

Capital structure measures the proportion of various sources of capital used by companies to maintain their growth and operations. Capital structure is increasingly concerned by firms because it influences the cost of capital which finally effects the value of companies. In order to maximize the value of firms, managers adjust the proportion of different capital funds to minimise the cost of capital and the capital structure that can maximize the value of company is called optimal capital structure.

The theory of capital structure is first developed by Modigliani and Miller in 1958.

Modigliani and Miller (1958) state that the firm value is not influenced by its capital structure based on following assumptions:

- All market participants can acquire the same information.
- There are no corporate taxes or personal income taxation.
- Trading shares does not generate costs.
- The borrow rate of investors is same as the firm.

Based on above-mentioned theory, there is no optimal capital structure. This is because Corporate value is constant regardless of the capital structure.

However, Modigliani and Miller corrected their theory in 1963 and introduced the effect of taxes on the value of companies. According to Modigliani and Miller (1963), in order to enlarge tax shield, companies should use debt as much as possible because tax shield can increase the value of companies. This theory can be represented by following formula:

$$V^L = V^U + PV(Interest\ Tax\ Shield) \quad (2)$$

Above-mentioned theory and formula show that the optimal capital structure under MM proposition with tax is to use 100% debt as capital funding. However, Modigliani and Miller only consider the benefit of tax shield but ignore the risk of debt. As a result, based on MM theory, the trade-off theory is developed. According to Acaravci (2015), the assumption of trade-off theory is that the trade-off between the costs and benefits of debt could be used to measure capital structure. Trade-off theory believes that the costs of financial distress rises with the increase of debt. In addition, the agency costs or benefits between the stakeholders can also influence the capital structure (Acaravci, 2015). As a result, trade-off theory and agency cost theory can be represented by following formula:

$$V^L = V^U + PV(Interest\ Tax\ Shield) - PV(Financial\ Distress\ Costs) - PV(Agency\ Costs\ of\ Debt) + PV(Agency\ Benefits\ of\ Debt) \quad (3)$$

According to above formula, there could be an optimal capital structure when the cost of bankruptcy is large than 0 and there is an agency benefits of debt. Although trade-off theory has become one of the main theories of capital structure, Miller (1977) argues that the cost of agency and financial distress are too small, which could not influence the benefit of tax shield. As a result, in future, the theory of optimal capital structure maybe still needs to be developed.

5 The optimal capital structure of X

5.1 Model selection

This report analyses the optimal capital structure of X based on trade-off theory.

The formula of trade-off theory is:

$$V^L = V^U + PV(Interest\ Tax\ Shield) - PV(Financial\ Distress\ Costs) \quad (4)$$

V^U in this formula is constant. As a result, this report only analyses the relationship between PV (Interest Tax Shield) and PV (Financial Distress Costs).

5.2 Data

The data use in this part from balance sheet of X released on MorningStar DatAnalysis database in 2019. This report also assumes some other potential capital structure in 2019 to compare with the current capital structure, which could help X to find whether this company is at its optimal capital structure.

5.3 The present value of interest tax shield

According to Ross, Westerfield and Jaffe (2008), we assume that the interest of debt and the cash flow have the same risk. As a result, interest rate could be used as the discount rate of interest tax shield. Assume that R is interest rate and D is the amount of debt and T is corporate tax rate. As a result, the interest is R*D and the interest tax shield can be represented by R*D*T. Based on above assumptions, the present value of interest tax shield is:

$$\text{The present value of interest tax shield} = \frac{R*D*T}{R} \quad (5)$$

As a result, the present value of interest tax shield is D*T. According to Australian Taxation Office, the tax rate of corporate tax is 30%.

5.4 The present value of financial distress costs

According to Bar-Or (2000), an expected financial distress costs of a health company is 8% to 10% of its value. In this report, 10% is used to calculate the financial distress cost because the D/E ratio is higher than industry average, which could incur higher financial distress costs. Due to the data used in this report is in current year (2019), the estimate financial distress cost is equal to 0.1*value.

5.5 Calculation assume

Calculation assume that:

- D is the value of debt.
- E is the value of equity.
- V is the value of company
- Z is the difference between interest tax shield and financial distress cost. According to these assumptions, the present value of interest tax shield is 0.3*D and the present value of financial distress cost is 0.1*(D+E). Thus,

Z=0.3*D-0.1*(D+E)

Z=0.3*D-0.1*D-0.1*E

Z=0.2D-0.1E

D<V

If 0.2D large than 0.1E, debt could add value to company. Otherwise, debt would cause financial distress. The value of debt of X is $2845.8 million and the value of equity is $2629.38 million. 0.2*$2845.8 million is equal to $569.16 million and 0.1*$2629.38 million is equal to $262.94 million, which satisfy above formula. This means that the current proportion between debt and equity could increase the value of firm. However, accurate optimal capital structure cannot be calculated based on above method. This is because it is extremely difficult to estimate the financial distress costs of a company with health financial condition (Ross *et al*., 2008).

Furthermore, according to part 2, we compare X with other companies in same sector and industry average. The D/E ratio of X is higher than other companies and industry

average. According to MorningStar DatAnalysis Premium Report (2019), the total assets of X also large than the total assets of its peer group. As a result, X approach or is at its optimal capital structure.

6 Conclusion

Above-mentioned theories and methods suggest that, the capital structure of X is better than its peer group and it is believe that this company approach or is at its optimal capital structure. However, there are some limitations in this report. Firstly, the sample size of peer group is small because of the constraint of selection rules, which could lead to an inaccuracy result. Secondly, due to the difficulty of calculating the present value of financial distress costs, the quantity method used in this report cannot acquire an accurate optimal capital structure. In future, related research job could focus on the financial distress costs of a company with health financial condition. In addition, if there are more comparable companies under the rules of selection, the result could be more accurate.

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Research on the Problems and Governance of Live E-commerce Based on Blockchain Technology

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Abstract: With the advent of the digital age, new e-commerce formats emerge one after another. As a new mode of e-commerce, live e-commerce plays an important role in helping economic development and increasing social welfare. Based on the current research situation of live broadcast e-commerce, this paper analyzes the problems of irregular behavior and ineffective supervision in the operation of live broadcast e-commerce, and puts forward that the government should strengthen the legislation of live broadcast e-commerce and rationally use blockchain to provide technical support to the government and regulatory agencies, aiming at standardizing the behavior of live broadcast e-commerce and promoting the sound development of live broadcast e-commerce.

Key words: Blockchain technology; Live e-commerce; Standard

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1 Introduction

In recent years, as a new e-commerce format, live e-commerce has developed rapidly with the digitalization process. According to statistics, in the first half of 2020, the transaction volume of live broadcast e-commerce in China reached 327.4 billion yuan, an increase of 62.5% year-on-year, which made great contributions to fighting the epidemic and promoting economic development,At the same time, a series of problems such as fake goods flooding, live broadcast rollover, and consumers' difficulty in defending their rights frequently occurred. Strengthening the management of live e-commerce and standardizing the behavior of live e-commerce have also become a hot topic in academic research.

In 2018, the state promulgated the Electronic Commerce Law to regulate the e-commerce market. Although the promulgation of e-commerce law can regulate some market operation order, it is not perfect. With the development of the times, a new form of e-commerce has emerged: live e-commerce, which also brings new challenges. Legal loopholes, such as overturned goods with live broadcast, big data killing, and no way for consumers to complain, all plague the government regulatory authorities and impact the traditional e-commerce law,The e-commerce law urgently needs to be further improved.

In the process of perfecting the e-commerce law, we should not only understand the development of domestic e-commerce law, but also innovate according to the previous research on live e-commerce, so as to ensure that the legal repair conforms to the practical application. This paper focuses on the development of live broadcast e-commerce, and analyzes the problems in the development process combined with the development model of live broadcast e-commerce, as well as the ineffectiveness of the current e-commerce law for the supervision of live broadcast e-commerce. In the part of policy recommendations, this paper attempts to improve the efficiency of supervision by combining e-commerce law with blockchain technology, and provide reference for the legislative adjustment of e-commerce.

2 China's live e-commerce research status

Live e-commerce, that is, online celebrity or stars publicize products through the Internet and major e-commerce platforms, highlighting the value of goods and giving certain discounts to attract consumers, is an industry marketing innovation that deeply integrates e-commerce and live broadcast.

As a new thing, scholars have relatively diversified

research directions for live e-commerce,Wang Zhihe (2020) turned to live e-commerce to boost rural revitalization; Guo Quanzhong (2020) studied the development motivation, current situation and trend of live broadcast e-commerce respectively; At the same time as the live e-commerce prospered and developed, chaos began to appear, facing the chaotic live e-commerce; Yao Linqing and Yu Haixia (2020) analyzed the causes of the outbreak of live delivery and pointed out the problems arising from the business model of live e-commerce[1-3]. Li Qiuhong (2020) thinks that the live broadcast e-commerce needs to face the reality and correct the existing drawbacks if it wants to keep the popularity[4]. Zhong Tao (2020), based on the development status of live e-commerce, analyzes the development factors and development momentum of live e-commerce, and predicts the future growth sustainability of live e-commerce; With the live broadcast of various star network reds, Zhou Kai and Guo Shiping (2020) studied the value of leading cadres' "live broadcast with goods" for poverty alleviation and the hidden worries at the same time; Pei Xueliang and Deng Huimei (2020) conducted an empirical test on the co-creation behavior of e-commerce value by building a structural equation model[5-7]. Li Xian, Cui Bojun (2020) combined with double circulation, pointed out that e-commerce live broadcast can be a means to stimulate medium and low demand and promote internal circulation[8].

To sum up, domestic scholars have made researches on live broadcast e-commerce from various aspects, pointing out that the behavior of live broadcast e-commerce is irregular, but they have not put forward effective concrete solutions,Based on blockchain technology, this paper puts forward specific suggestions on standardizing the behavior of live broadcast e-commerce, providing suggestions for the adjustment of e-commerce law and creating a good business environment.

3 The development model and existing problems of live e-commerce

At present, the development model of live e-commerce has begun to take shape, which is mainly divided into three types: First, the live broadcast platform connects with commodity links, and the development of live e-commerce is in full swing,As a live broadcast platform, it is closely followed, and the live broadcast is directly connected with commodity links., thus indirectly associated with the e-commerce platform; Second, the traditional e-commerce platform opens the live broadcast function,The traditional e-commerce platform directly opens the live broadcast function based on the platform, and uses the platform's own traffic to drive the live broadcast development,After the live broadcast platform has a certain traffic, it drives the development of the e-commerce platform and forms a closed loop; Third, the content e-commerce based on live broadcast usually attracts the traffic by sharing the content about wearing, beauty and so on, and turns the traffic into actual purchasing power.

As a new shopping form, live delivery is getting more and more popular, but it still can't get rid of some problems in the traditional shopping mode, such as false propaganda and fake sales. At the same time, the live broadcast has its own problems: single-mailing, fake live broadcast data, unsafe payment and piracy, etc. Faced with various chaos such as information asymmetry, false propaganda and sales counterfeiting in live e-commerce, the government and regulatory agencies have successively issued corresponding policies to regulate the behavior of live e-commerce,The National Network Information Office issued the "Internet Live Marketing Information Content Service Management Regulations (Draft for Comment)",It is proposed to prohibit illegal activities such as live data traffic fraud and false information; Shanghai Municipal Supervision Bureau put forward to urge platform operators to establish and improve platform rules by administrative means, but most of them have little effect. In November, 2020, China Consumers Association named the live broadcast data of the stars to falsify, and the "rollover" of the live broadcast of the stars frequently occurred.

Compared with the traditional e-commerce platform, after-sales service is a big shortcoming of live delivery. Traditional e-commerce platform is relatively mature in after-sales service, which can effectively protect consumers' rights and interests. According to the Online Survey Report on Consumer Satisfaction of Live E-commerce Shopping released by China Consumers Association, in traditional E-commerce shopping, when there are quality problems in goods, when consumers defend their rights by giving evidence, the procedures are relatively clear, and the problems can be basically solved. However, the same problem appears in the live broadcast e-commerce, but the results are quite different,Due to the difficulty of proof and the complicated process, less than 40% of the respondents who encounter problems defend their rights.

The outbreak of the epidemic in 2020 made the live

delivery of goods more common,How to define the behavior of live delivery of goods has become a major problem,The interim measure is to include live e-commerce in the management under the rules of the Advertising Law, but in fact, in terms of monitoring technology and law enforcement resources, It is not feasible to include live e-commerce including "live delivery of goods" in the supervision of the Advertising Law, and to measure new industries with "lagging" legal provisions will inevitably lead to adequate cutting.

Although there are a large number of laws on e-commerce in China, e-commerce is booming as a new trading mode, and the e-commerce law that protects the business environment of e-commerce is also in the initial exploration stage, and its defects are inevitable. With regard to many legal issues involved in live e-commerce, under the digital economy, the government and regulatory authorities should not only strengthen legislation, improve laws and regulations of the live broadcast industry, but also improve regulatory means, and combine administrative means with AI, blockchain and other technical means to improve regulatory efficiency, solve the problem of irregular behavior of live broadcast e-commerce from the root cause, and promote the healthy and orderly development of the Internet live broadcast e-commerce industry.

4 The countermeasures and suggestions for standardizing the development of live e-commerce

In view of the irregular behavior of live broadcast e-commerce, blockchain technology can be introduced to assist government supervision, accurately solve the pain point of live broadcast e-commerce, and achieve convenient supervision.

4.1 Blockchain traceability guarantees product quality and safety

Blockchain has the characteristics of traceability, non-tampering, transparency of data disclosure and so on. The regulatory authorities make full use of blockchain technology reasonably,The traceability characteristics of blockchain ensure product formality, trace product sources and responsible subjects, etc,The immutability of blockchain ensures the authenticity of trading records and evaluation of the platform, and improves the regulatory efficiency. The regulatory authorities supervise and control the whole supply chain through blockchain technology, and record and archive all the circulation links of each product to ensure the authenticity of the product,The whole process is open and transparent, and the goods can trace the whole circulation link, ensuring food safety and product quality, and greatly reducing the time cost of consumers in the authentic verification link.

4.2 Blockchain identifies true and false traffic

In view of the fraudulent behavior of live e-commerce anchor traffic, the government can reconstruct the user ecology in the live broadcast field through blockchain technology. Since it is difficult to determine whether the traffic is valid after distribution, the traffic data is combined with relevant identity information for information authentication, and the traceability is used to establish a credit evaluation system, so that every stage of converting the data traffic into actual purchase is placed on the blockchain, increasing the cost of data fraud and eliminating the possibility of data fraud from the root cause. The protection of consumers' personal information should be supervised by formulating reasonable laws. Linking the credit system with the information protection level of e-commerce platforms, adopting a blacklist system, giving a yellow card warning to platforms that sell privately and provide personal information to third parties, and lowering the credit level.

In addition, the e-commerce platform is prevented from over-collecting user information, resulting in big data killing behavior. The government can make rational use of blockchain to protect personal information. Blockchain technology can store data safely, and its security is much higher than that of traditional information protection because of its unchangeable and decentralized characteristics. With the decentralization of data, personal information will no longer be stored in large data centers and databases of monopoly platforms. Compared with all user data being controlled by a monopoly company, this will greatly reduce the possibility of personal data leakage.

4.3 Blockchain solves the crisis of e-commerce trust

For the after-sales service in live broadcast sales, it is necessary to reform the complaint supervision system from the platform point of view, Consumers' complaints must be dealt with within the specified time, so as to improve work efficiency, establish a self-inspection system for commodity circulation as soon as possible, and establish a unified compensation standard. For goods with quality problems, the platform should negotiate with consumers immediately and give a reply within the specified time based on the

principle of self-awareness. From the government's point of view,

For the consumer's rights protection problem, the supervision department should coordinate law enforcement besides clarifying the division of labor among various departments, so as to form a network supervision and avoid the supervision vacancy. The distributed characteristics of blockchain can keep complete information, ensure that consumers' commodity transaction records cannot be tampered with, improve the trustworthiness of e-commerce, and provide a strong guarantee for consumers' rights protection. Putting government regulators in the blockchain and forming supervision points at each level is conducive to real-time monitoring, improving supervision efficiency, strengthening the credit system construction of live broadcast e-commerce, making goods of high quality and good price, and really bringing benefits and convenience to consumers.

4.4 Tracking the latest developments in e-commerce and improving legislative efficiency

All laws have their own time limit, and the time limit of e-commerce is obviously shorter than that of other industries. Therefore, it is necessary to revise the e-commerce law to meet the new situation. The formulation and revision of traditional laws take a long time and the procedures are complicated, which is contrary to the rapid development of the Internet, resulting in a slow pace of e-commerce legislation. Therefore, it is necessary to strengthen legislation, improve legislative efficiency, encourage scholars to track the latest trends of e-commerce, put forward suggestions for new directions, make timely adjustments to e-commerce laws, and enhance the forward-looking nature of law formulation and revision.

Internet has opened up a new era of digitalization, produced new industrial e-commerce, and emphasized the timeliness of laws. Therefore, in order to keep pace with the times, e-commerce legislation should improve legislative efficiency. This requires that the legislature should establish the concept of efficiency, simplify it as appropriate, speed up the legislative process and achieve short-term efficiency. Only in this way can we establish an effective mechanism to maintain and restrict e-commerce and create a good competitive atmosphere.

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Analysis of Chinese Agricultural Product Trade

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Abstract: This paper clarifies the status of Chinese agricultural product trade through the calculation of Chinese agricultural product trade competitive advantage index for a total of 21 years from 1999 to 2019.

Keywords: Agricultural products; Trade status; Trade competitive advantage index

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1 Preface

China has now developed into a large agricultural trade country with a high reputation in the world. Through detailed analysis of the comparative advantages of Chinese agricultural product trade, it finds out the existing problems in Chinese agricultural product trade, and proposes strategies to promote the development of Chinese agricultural product trade.

2 Current status of Chinese agricultural trade

Chinese agricultural product trade exhibits the following characteristics under the combined effects of national macro-control, international environment, natural climate and other factors:

Table 1. Status quo of Chinese agricultural trade

Year	Total agricultural imports and exports	Total agricultural exports	Total agricultural imports	Total agricultural trade balance
1999	221.3	138.7	82.6	56.1
2000	268.2	156.2	112.0	44.2
2001	279	160.7	118.3	42.4
2002	305.9	181.4	124.5	56.9
2003	403.6	214.3	189.3	25.0
2004	514.2	233.9	280.3	-46.4
2005	558.3	271.8	286.5	-14.7
2006	630.2	310.3	319.9	-9.6
2007	775.9	409.7	366.2	43.5
2008	985.5	583.3	402.2	181.1
2009	921.4	395.9	525.5	-129.6
2010	1219.6	494.1	725.5	-231.4
2011	1540.4	601.3	939.1	-337.8
2012	1757.7	632.9	1124.8	-491.9
2013	1867	678.3	1188.7	-510.4
2014	1945	719.6	1225.4	-505.8
2015	1875.6	706.8	1168.8	-462
2016	1845.6	729.9	1115.7	-385.8

2017	2013.9	755.3	1258.6	-503.3
2018	2168.1	797.1	1371	-573.9
2019	2300.7	791	1509.7	-718.7

Unit: USD 100 million

Note: Data source "China Statistical Yearbook"

2.1 The overall scale of Chinese agricultural imports and exports is on the rise

Table 1 shows that the total import and export trade of China's agricultural products has increased from 22.13 billion US dollars in 1999 to 230.07 billion US dollars in 2019, an increase of 940%, with annual growth rates of 21.2%, 4.0%, 9.6%, 31.9%, 27.4%, and 8.6%. %, 12.9%, 23.1%, 27.0%, -6.5%, 32.4%, 26.3%, 14.1%, 6.2%, 4.2%, -3.6%, -1.6%, 9.1%, 7.8%, 6.1%; of which 1999～ The growth rates of exports in 2019 were 12.6%, 2.9%, 12.9%, 18.1%, 9.1%, 16.2%, 14.1%, 32.0%, 42.3%, -32.1%, 24.8%, 21.7%, 5.3%, 7.2 %, 6.1%, -1.8%, 3.3%, 3.5%, 5.5%, -0.8%. With the increase in export value year by year, the growth rate of import value of agricultural products has been even more dramatic. From 1999 to 2019, they were 35.6%, 5.6%, 5.2%, 52.1%, 48.1%, 2.2%, 11.7%, 14.5%, and 9.8. %, 30.7%, 38.1%, 29.4%, 19.8%, 5.7%, 3.1%, -4.6%, -4.5%, 12.8%, 9.9%, 10.1%, which are all higher than the total growth of trade volume and total export volume in each year Growth rate.

2.2 Chinese agricultural trade balance is gradually decreasing

Table 1 shows that from the perspective of trade balance, Chinese agricultural trade has gradually reduced from a surplus of $5.61 billion in 1999 to a deficit of $71.87 billion in 2019. In the same period, China's overall product balance was 29.23 billion U.S. dollars in surplus in 1999 and 422.74 billion U.S. dollars in surplus in 2019. The overall trend is that the trade surplus is strengthening. It can be seen that the overall advantage of Chinese agricultural products is weakening, and agricultural products have been hit by higher than industrial impacts since entering the WTO.

2.3 The share of agricultural products trade in Chinese total trade has declined

Although Chinese agricultural product trade has grown rapidly, the share of agricultural product trade in Chinese total foreign trade has shown a declining trend. The proportion of agricultural products trade in China's total trade from 1999 to 2019 was 6.1%, 5.7%, 5.4%, 4.9%, 4.7%, 4.4%, 3.9%, 3.6%, 3.6%, 3.8%, 4.2%, 4.1%, 4.2%, 4.6%, 4.5%, 4.5%, 4.7%, 5.0%, 4.9%, 4.7%, 5.0%, an overall decrease of 1.11 percentage points within 21 years.

3 Discrimination and analysis of the comparative advantage of agricultural products

3.1 Overview of comparative advantage theory

Comparative advantage means that if the opportunity cost of producing a product in a country (measured by other products) is lower than the opportunity cost of producing the product in other countries, then the country has a comparative advantage in producing the product. Compared with other industries, trade in agricultural products is more dependent on resource endowments and their determined comparative advantages. At the same time, the comparative advantage of agricultural products is not static or static, especially when the resource endowment structure changes, the comparative advantage will dynamically evolve over time. Dynamic comparative advantage provides the possibility to avoid falling into the trap of comparative advantage[1]. The traditional comparative advantage theory ignores technological progress and time factors, which damages the broadness and applicability of the theory to a certain extent, making it unable to make a satisfactory explanation for the changes in the contemporary international trade pattern[2]. Therefore, the calculation indicators of agricultural products in this article are all using dynamic comparative advantage indicators, which is also in line with the current trend of increasing emphasis on dynamic comparative advantages.

According to the principle of comparative advantage, the geographical division of labor should abide by the principle: no matter whether its production has absolute advantages or disadvantages compared with other regions, each region should produce products with relative advantages through foreign trade or Domestic trade, import or transfer of products with relative disadvantages can achieve the best regional and national resource allocation efficiency and the largest welfare[3].

3.2 Index selection

A representative indicator of the comparative advantage of

agricultural trade is the Trade Competitive Advantage Index (TC), which is widely used to measure intra-industry trade advantages. It is mainly determined by the ratio of the import and export trade balance of a certain agricultural product to the total trade volume in a certain period of time. The specific formula is:

$$TC=(X-M)/(X+M) \quad (1)$$

In the formula, X is the export value of a certain agricultural product in a certain period, and M is the import value of a certain agricultural product in a certain period. The value range of TC is $-1 \leq TC \leq 1$. When $-1 \leq TC < -0.8$, the industry has a very obvious comparative disadvantage; when $-0.8 \leq TC < -0.5$, the industry has a relatively obvious comparative disadvantage;- When $0.5 \leq TC < 0$, the industry is in an unobvious comparative disadvantage; when $0 \leq TC < 0.5$, the industry is in an unobvious comparative advantage; when $0.5 \leq TC < 0.8$, the industry has a relatively obvious comparative advantage; $0.8 \leq$ When $TC < 1$, the industry has a very obvious comparative advantage.

3.3 Scope of agricultural product research and analysis

The article selects 9 types of agricultural products from 2 representative categories from the Standard International Trade Classification (SITC) for analysis. They are (00) live animals, (01) meat and meat preparations, (02) dairy products and birds' eggs, (03) fish, crustaceans, molluscs and aquatic invertebrates, and preparations thereof, (04) cereals and cereal preparations, (05) vegetables and fruits, (06) sugar, sugar preparations and honey, (07) coffee, tea, cocoa, spices, and manufactures thereof; SITC4 animal and vegetable oils, fats and wax.

3.4 Analysis of discriminant results

According to the selection of the above indicators and the determination of the scope of analysis, the competitive advantage index of Chinese agricultural products trade from 1999 to 2019 is shown in Table 2. From Table 2, the following points can be derived:

Table 2. Competitive advantage index of Chinese agricultural products trade

Year	Live animals	Meat and meat preparations	Dairy products and birds' eggs	Fish, crustaceans, molluscs and aquatic invertebrates, and preparations thereof	Cereals and cereal preparations	Vegetables and fruits	Sugar, sugar preparations and honey	Coffee, tea, cocoa, spices, and manufactures thereof	Animal and vegetable oils, fats and wax
1999	0.711	0.161	0.000	0.376	0.447	0.778	-0.130	0.925	-0.812
2000	0.762	0.083	-0.074	0.304	0.513	0.731	-0.011	0.913	-0.776
2001	0.816	0.169	-0.066	0.321	0.348	0.695	-0.414	0.925	-0.736
2002	0.733	0.029	-0.167	0.295	0.539	0.720	-0.105	0.920	-0.872
2003	0.472	-0.080	-0.225	0.283	0.680	0.708	-0.047	0.915	-0.916
2004	0.201	0.195	-0.313	0.268	-0.268	0.676	-0.143	0.928	-0.927
2005	0.502	0.117	-0.267	0.203	0.141	0.687	-0.038	0.913	-0.842
2006	0.680	0.043	-0.304	0.201	0.234	0.677	-0.144	0.897	-0.819
2007	0.672	-0.350	-0.240	0.160	0.501	0.696	0.076	0.867	-0.917
2008	0.660	-0.488	-0.169	0.174	0.130	0.703	0.230	0.857	-0.896
2009	0.519	-0.381	-0.509	0.308	-0.043	0.588	0.234	0.884	-0.918
2010	0.256	-0.382	-0.663	0.337	-0.283	0.585	0.011	0.834	-0.920
2011	0.205	-0.521	-0.684	0.326	-0.363	0.552	-0.246	0.794	-0.910
2012	0.077	-0.614	-0.718	0.347	-0.672	0.455	-0.336	0.728	-0.917
2013	0.146	-0.714	-0.812	0.353	-0.678	0.465	-0.239	0.795	-0.894
2014	-0.175	-0.664	-0.834	0.363	-0.742	0.408	-0.074	0.755	-0.868
2015	0.043	-0.731	-0.690	0.356	-0.837	0.388	-0.142	0.729	-0.844

2016	0.243	-0.598	-0.856	0.477	-0.656	0.456	0.181	0.379	-0.812
2017	0.214	-0.545	-0.891	0.422	-0.640	0.434	0.203	0.461	-0.809
2018	0.138	-0.593	-0.896	0.288	-0.551	0.325	0.216	0.414	-0.759
2019	0.012	-0.755	-0.913	0.117	-0.468	0.247	0.158	0.368	-0.781

Note: Data source "China Statistical Yearbook"

3.4.1 The competitiveness of Chinese agricultural products is generally declining

The average competitiveness index of Chinese agricultural products from 1999 to 2019 is 0.273, 0.272, 0.229, 0.232, 0.199, 0.069, 0.157, 0.163, 0.163, 0.133, 0.076, -0.025, -0.094, -0.183, -0.175, -0.203, -0.192 , -0.132, -0.128, -0.158,-0.224 shows that the overall comparative advantage is declining. Niu Baojun (1977) studied the comparative advantage of agricultural products trade in the past ten years and concluded that the comparative advantage of the world's agricultural products is a "U"-shaped curve trajectory that first declines and then rises. The reason is that as the process of industrialization continues to intensify, the country's economic policy has gradually shifted from focusing on supporting industry to focusing on supporting agriculture. Therefore, the comparative advantage of agricultural products first declines to a certain level and then rises. It can be seen from this that Chinese agricultural products are in a steady but declining stage.

3.4.2 The competitiveness of Chinese agricultural products

Products with all positive TC values and comparative advantages are (00) live animals, (03) fish, crustaceans, molluscs and aquatic invertebrates, and preparations thereof, (05) vegetables and fruits, (07) coffee, tea, cocoa, spices, and manufactures thereof. 4 major types of agricultural products. It can be seen that China has a comparative advantage in these four products, especially vegetables and fruits have a stable and strong comparative advantage. From the perspective of product advantage, (05) vegetables and fruits, (07) coffee, tea, cocoa, spices, and manufactures thereof, have strong comparative advantages, and the competitiveness of the two agricultural products is gradually strengthening. (03) fish, crustaceans, molluscs and aquatic invertebrates, and preparations thereof have insignificant comparative advantages; (04) cereals and cereal preparations of two agricultural products of cereals and products are declining. The advantages of (00) live animals have changed significantly. The obvious advantage in 2014 decreased, and the significant advantage in 2014 and 2015 decreased and increased.

The products with comparatively negative TC values are (02) dairy products and birds' eggs, which have insignificant comparative disadvantages; (06) sugar, sugar preparations and honey have insignificant comparative disadvantages and fluctuate development; SITC4 animal and vegetable oils, fats and wax have Stronger than disadvantaged.

The agricultural products with positive and negative TC values are (01) meat and meat preparations, and (04) cereals and cereal preparations. Except for the comparative advantage of (01) meat and meat preparations that turned from advantage to disadvantage in 2003, the remaining years showed insignificant comparative advantages; (04) Cereals and cereal preparations showed a strong increase in comparative advantage before 2003. But cereals were at a disadvantage in 2004.

3.4.3 Chinese agricultural products are measured in terms of intensity

The advantages of labor-intensive products have increased, while the advantages of land-intensive products have decreased. According to data from the United Nations COMTRADE database, agricultural products that are land-intensive include (02) dairy products and birds' eggs, (04) cereals and cereal preparations, (06) sugar,sugar preparations and honey, and SITC4 animal and vegetable oils, fats and wax. The labor-intensive products include (05) vegetables and fruits, (07) coffee, tea, cocoa, spices, and manufactures thereof.

Chinese products with obvious comparative advantages are labor-intensive products and their advantages are on the rise, while Chinese land-intensive products show comparative disadvantages and their disadvantages are increasing.

3 Conclusion

Through the calculation and analysis of the comparative advantage index of agricultural products trade, the following conclusions are drawn:

3.1 Advantages of Chinese agricultural product trade.

In Chinese agricultural product trade, the advantageous trade products are mostly labor-intensive products, and the inferior products are mostly land-intensive products;

3.2 The overall competitiveness of Chinese agricultural products is weakening, and the comparative advantages of labor-intensive products are increasing, but the increase is lower than the increasing disadvantages of land-intensive products.

3.3 The overall scale of Chinese agricultural trade is expanding, but at the same time the trade balance has turned from a surplus to a deficit.

In the agricultural product trade, a large number of imported products are land-intensive products and exported are labor-intensive products.

4 Policy recommendations

4.1 For agricultural products that already have comparative advantages, gradually open their degrees of freedom, and let the market stimulate the enthusiasm of farmers and expand their output.

Specific measures: It can reduce the middle chain from farmers to the market, realize the two-way transparency of information from the market to the farmers, and let the market directly guide the farmers' planting behavior.

4.2 For agricultural products that do not have comparative advantages, the main point of attention is to improve the quality of agricultural products.

The government subsidies will stimulate the enthusiasm of farmers and reduce the level of disadvantages. The government can take appropriate subsidies within the scope of the "green box" and "yellow box" permitted by the WTO to stimulate farmers' production and reduce farmers' market risks. In agricultural research and selection of fine varieties, such products should emphasize the advantages of quality.

4.3 The main actors of agricultural products are farmers.

In addition to policy guidance, farmers should also cultivate their ability to participate in the market and respond to the market. Such as: encourage farmers to conduct one-stop production and marketing, improve farmers' information processing and analysis capabilities, and speed up the construction of rural industry organizations such as rural cooperative organizations, agricultural product export associations, agricultural product insurance organizations, etc.

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The Enlightenment of the Present Situation of Marine Environment in Zhejiang Province to the Relevant Development Requirements in the New Period

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Abstract: In the new era, the development level of marine industry in Zhejiang province has been improved rapidly, and a series of marine development concepts and requirements have been implemented one after another, which plays an important role in improving the current situation of marine environment. With the deepening of marine development, the current situation of marine environment in the new era has become complex and diverse. How to make the relevant concepts and requirements of marine development to cope with and adapt to various new problems in the development process has become the key to promote the continuous improvement of marine development level.

Key words: Marine development; Theoretical requirements; Environmental status

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1 Introduction

For marine economy or land economy, the chain problems such as environmental pollution and destruction caused by development have become an important factor restricting the further improvement of development level. If people do not pay attention to it, such as the disappearance of some islands caused by global warming, the reduction of species diversity caused by high pollution and high toxic chemical element emissions, and the reduction of marine supply products and other practical problems will emerge in endlessly. Therefore, it is necessary to further improve and strengthen the relevant concepts and requirements brought about by the environmental situation.

2 Analysis of the current situation of marine environmental pollutants

With the continuous improvement of marine development level, many environmental problems caused by economic activities are becoming more and more prominent. Based on the observation and statistics of the specific pollutants involved, it is found that the main types of marine pollutants are becoming more and more diverse, and the main components are becoming more and more centralized and unified[1]. From 2014 to 2017, we collected the pollutant details of representative rivers into the sea and sewage outlets into the sea. It can be found that the main proportion of pollutants from rivers into the sea or from land sewage outlets into the sea is cod, and the proportion is increasing year by year. Nitrogen compounds such as total nitrogen, ammonia nitrogen, nitrate nitrogen and nitrite nitrogen all changed, but the decline rate and degree were different, and even organic compounds such as total nitrogen, nitrate

nitrogen and ammonia nitrogen rebounded in some years[2]. In addition, petroleum and heavy metal toxic pollutants, which account for a small proportion of the total amount of pollutants, have a slower annual decline than other pollutants, and the degree of attention to governance is relatively weak. In recent years, Zhejiang province strictly abides by the relevant national control measures and requirements for phosphorus pollutants, and has achieved remarkable results[3]. The content of phosphorus and related organic pollutants has decreased significantly. In terms of organic carbon, it remains stable every year. Because of its relatively stable chemical composition and structure, it is difficult to eliminate it, so it is difficult to control it (Table 1).

Table 1. Pollutant details of representative rivers into the sea and sewage outlets into the sea from 2014 to 2017

Source	Particular year	Chemical oxygen demand	Organic carbon	Total nitrogen	Ammonia nitrogen	Suspended matter	Nitrate nitrogen	Nitrite nitrogen	Total phosphorus	Petroleum	Heavy metal	Arsenic
Pollutants from rivers into the sea	2017	1690000	210000	180000	18000	-	110000	3517	17000	1589	833	105
	2016	1630000	210000	270000	28000	-	104000	7895	26000	1700	857	138
	2015	1960000	210000	340000	23000	-	152000	3375	27000	2033	1219	142
	2014	2140000	-	-	50000	-	-	-	65000	2368	1481	131
Sewage discharge at sea outfall	2017	27700	-	10400	1346	8700	-	-	322	63	61	-
	2016	52600	-	8900	1171	26700	-	-	424	72	39	-
	2015	28900	-	10800	2012	15800	-	-	435	150	41	-
	2014	41800	-	-	2936	23100	-	-	801	110	76	-

3 Current situation of marine environmental problems

Zhejiang province is located in the coastal zone because of its natural geographical distribution and tortuous coastline. In addition, the adjacent East China Sea is located in the middle of the Yellow Sea and the South China Sea, which is not conducive to the diffusion of pollutants and easy to accept pollutants from other sea areas; Secondly, due to the influence of subtropical monsoon climate in recent years, it has the characteristics of four distinct seasons and sufficient air volume, resulting in the aggravation of pollutant diffusion and the expansion of influence scope. In addition to the above-mentioned marine environmental problems, the frequent occurrence of marine disasters and over exploitation of Fisheries in Zhejiang province is also one of the prominent problems[4-5].

There are natural factors in the occurrence of marine disasters, but the inducing factors caused by human activities can not be ignored. These projects are basically industries with high pollution or pollution risk. Although environmental assessment and risk assessment have been conducted before and after the completion of relevant projects, and pollutant discharge treatment has been conducted for their respective production plants, once the leakage or excessive discharge occurs, the consequences of marine environmental loss are immeasurable, and the potential environmental risk is high[6]. In addition, the secondary marine industry in Zhejiang province has shown a trend of centralization and large-scale development, which has laid a hidden danger for environmental hazards and production accidents such as water pollution, waste gas pollution, nuclear leakage and oil spill.

The over exploitation and utilization of fishery resources is another practical problem facing the marine environment of Zhejiang Province, which is known as China's fish tank. At present, the development of Fisheries in Zhejiang province exists in the form of pelagic fishing and artificial breeding, and the proportion of offshore marine catch is less and less. The reason is that the excessive exploitation of Fisheries destroys the breeding cycle of aquatic organisms such as fish, resulting in the decline of fishery population diversity and regeneration capacity, and the sustainable utilization and development of marine fishery resources are restricted, which leads to the coastal fishery in Zhejiang province. The degradation of marine ecosystem[7-8].

In addition to the above-mentioned problems of marine environment in Zhejiang province, it also faces the realistic environmental challenges in the future development. Due to the development of marine economy, the marine sustainable development of Zhejiang province is facing complex and diverse challenges, involving the superposition of multiple complex problems, such as pollution pattern, ecosystem degradation, different degrees of coastal zone development, uneven utilization rate of marine resources space

development, marine ecological protection work to be further improved and so on, which also restricts the rise of marine economy in Zhejiang province and the real difficulty of the speed of development. With the further deepening of marine development in the future, under the pressure of high intensity and sustainable development, it will be the focus of future work to solve many restrictive factors that affect the sustainable development of the ocean, such as the decline of marine ecological capacity, the reduction of marine environmental carrying capacity and the destruction of marine environment.

4 Implications for development requirements

4.1 Strategy of strengthening the province by sea

Zhejiang province has made great contributions to the development of marine economy by relying on the advantageous location of China's eastern coast. The plan of building Zhejiang province into a strong marine economic province has been put forward as early as 2003, focusing on the development space and opportunities in the marine field in the 21st century, coupled with the advantages of rich marine resources and geographical location, coupled with a good industrial foundation, to accelerate the pace of marine economic development and the construction of a strong marine province, all of which benefit from the province's early awareness of the strategic intention of building a strong marine province in the future. It is not only related to accelerating the pace of building a well-off society, but also an important measure to realize social industrialization and modernization. Relying on the advantages of topography, to make full use of marine resources, cultivate new economic growth points and innovative development modes, and promote the optimization and adjustment of economic structure and strategy. Zhejiang province is located in an important area of the Yangtze River Delta in China. It is the core area of the strategy of building a national Yangtze River Delta economic belt. Building a strong marine province can promote the province to participate in the cooperation and exchange of the Yangtze River Delta in a larger scope, and play an important role in expanding the opening up, broadening the space for economic development, innovating the coordinated development pattern of land and sea, and improving the economic competitiveness and international influence of the province. It plays a crucial role[9-10].

In the strategy of building a strong marine province, Zhejiang province should take planning as the guide, scientific and technological progress and system innovation as the driving force, port city as the support, port construction and port industry as the breakthrough point, accelerate the comprehensive development of marine resources, strengthen the construction of marine infrastructure and environmental protection, further expand the total marine economy, optimize the marine industrial structure and layout, and constantly improve the quality of marine industry, comprehensive economic competitiveness and sustainable development capacity. To build a strong province of marine economy, we should find a way of joint development of marine economy and land economy with Zhejiang characteristics. It should be applied as the development principle that optimizing the structure and improving the level of production, market orientation and standing out innovation, and governing the sea according to law and coordinate development. We should make overall arrangements for the comprehensive development of marine resources such as "port, fishery, landscape, grassland and energy", speed up the adjustment of marine fishing and breeding structure, vigorously develop marine secondary industry, actively expand marine service industry, and strive to enhance the overall strength and international competitiveness of marine economy. We should give full play to the basic role of the market in allocating resources, form a diversified investment mechanism and market-oriented operation mechanism, vigorously promote the innovation and progress of marine science and technology, and give full play to the role of science and technology education in the development of marine economy. Speed up the legal construction of marine resources development and utilization, straighten out the marine management system, adhere to the unity of marine resources development and utilization and marine ecological environment protection, and enhance the sustainable development capacity of marine economy. Specifically, we should optimize the structure of marine fishery and salt industry, accelerate the development of port industry and marine service industry, seriously implement the strategy of invigorating the sea through science and education, attach importance to the work requirements of combining the comprehensive utilization and development of marine resources with ecological environment protection, and strengthen the investment and support for marine economy, so as to effectively guarantee and stimulate the implementation of the strategy of strengthening marine

province. To speed up port industry and marine service industry is to speed up the development of coastal port construction, marine transportation, port industry, marine tourism and other fields. We should cultivate marine high-tech industries and speed up the training and introduction of marine scientific and technological talents. In addition, the organization and coordination, investment, scientific and legal management of marine economic work are also strengthened to jointly promote the development of the strategy of building a strong marine province in Zhejiang province.

4.2 Marine ecological civilization construction

The level of marine development in Zhejiang province is changing from immature to mature. Meanwhile, the mode of growth is gradually changing from extensive to intensive, which greatly improves the utilization efficiency of marine resources. Throughout the history of marine economic development, it can be seen that this is also a process of continuous supplement and improvement of constraints such as environment exposed in the process of related development. Taking marine fishery as an example, excessive fishing and uncontrolled acquisition of a large number of fish and other marine biological resources have disrupted the original growth and reproduction laws of organisms, affected the evolution process of related species, and destroyed the original more balanced ecosystem in the sea. In addition, in the process of extraction, processing and utilization of marine non food resources and energy resources, certain chemical principles and technologies will be used to extract certain components or elements.

According to statistics, most of the marine environmental pollution occurs in the coastal waters, and more than 70% of the pollution in the coastal waters comes from land pollution sources, so the pollution prevention and control of land pollution sources has become the key to effectively resolve and reduce the damage of marine environmental pollution. The characteristic of strong diffusion ability is that the pollutants in seawater will continue to spread and disperse with seawater. Although seawater itself has self-purification ability, this self-purification ability can only be achieved by relying on the decomposition and degradation process of water pollutants by microorganisms in seawater. First, the process is relatively slow; Secondly, the toxic elements such as heavy metals and arsenic in the pollutants will make the microorganisms in the water die out, which will affect the main body of this process, and then cause the occurrence of stagnant water in a certain water area. Moreover, with the flow of water, this kind of pollution will intensify and spread to the surrounding waters, causing immeasurable losses.

As a big province of marine resources, Zhejiang province has been in the forefront of the country in the construction of marine ecological civilization. In accordance with the five in one overall development layout and four comprehensive strategic development layout, we should strengthen the five development concepts of innovation, coordination, green, openness and sharing as the guide, take the construction of ecological civilization as the core, coordinate all aspects of comprehensive management and control development, and comprehensively implement the development idea of "green water and green mountains are golden mountains and silver mountains". Efforts have been made to improve the level of intensive and economical utilization of marine resources, comprehensive management of marine environment, innovation ability of marine science and technology, disaster early warning and disaster prevention and reduction ability, reform of law enforcement system and mechanism, and construction of planning supporting system. It has further solved the problems such as the weak carrying capacity of marine environment, the relatively insufficient reserves of sea beach resources, the imbalance of island coastline development and protection, the rising risk of marine disasters, and the weak technical support of marine management. It has improved the comprehensive marine management capacity, laid a solid foundation for the transformation of Zhejiang from a big marine province to a strong marine province, and finally built a "clean water, green coast" city. The marine ecological civilization pattern of "clean beach, beautiful bay, abundant material and pleasant people" provides guarantee.

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