

The Development of Internet of Things Economy under the Experience of Internet Economy: A Case Study of Jiangxi Province

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Abstract. The Internet of Things economy is a new stage of digital economy development after computers, the Internet and mobile communication, which is of great significance for the development of regional economy. By comparing and analyzing the characteristics of the development of the Internet economy, it is believed that the economic problems solved by the Internet of Things economy are becoming more complex, with severe market segmentation and the need to bear expensive terminal equipment costs, which hinder its development. The Internet of Things economy in Jiangxi Province has made tremendous achievements in institutional construction, electronic information industry, infrastructure construction, and Internet of Things application. However, considering the fierce competition in the Internet of Things economy, the development law of the "winner take all" preemptive game, and the problems inherent in the development of the Internet of Things economy in Jiangxi Province, more efforts need to be made in the development of the Internet of Things economy in Jiangxi Province. Jiangxi Province can promote the development of the Internet of Things economy by strengthening the application of the Internet of Things, encouraging enterprises to design more terminal device pricing mechanisms, and moderately concentrating resources on top enterprises.

Key word: The Internet of Things economy; The Internet economy; The "winner take all" preemptive game.

1. Introduction

The Internet of Things economy is a new stage in the development of digital economy after computer, Internet and mobile communication. The Internet of Things economy has become a new direction of industrial layout not only in developed countries and regions at the national macro level, but also at the provincial level. More and more provinces and cities have formulated their own development plans for the Internet of Things economy. It has reached a consensus that the Internet of Things economy plays a leading role in regional economy and its comprehensive competitiveness. In order to pave the way for the healthy development of the Internet of Things economy in the region, the research on the development law of the Internet of Things economy needs to be further strengthened. Internet of Things economy is a form of digital economy, which has many commonalities compared with the Internet economy. Jiangxi Province has a good foundation for the development of digital economy. This paper believes that it is an important way to study the path of Internet of Things economy in Jiangxi province to analyze and summarize the development context of Internet economy and explore the comparative development of Internet of Things economy.

2. The development of Chinese Internet economy and its enlightenment

Digital economy includes digital industrialization, industry digitization, digital governance and data value. The development of digital economy in a broad sense started from the first computer ENIAC developed by the United States in 1946. It has experienced several times, such as electronic computer, personal computer, PC Internet, comprehensive digital economy and mobile Internet. China's digital economy can be counted from the beginning of Internet access in 1994, to the establishment of Sohu, Tencent and Sina in 1998, the establishment of Baidu in 2000, and the official issuance of 5G license in 2019. In a short period of time, the digital economy has gone through several stages in China. In 2016, the size of the digital economy is 22.6 trillion, accounting for 30.28% of

GDP. By 2021, the size of the digital economy reach 45.5 trillion, accounting for 39.78% of GDP. In order to compare with the Internet of Things economy, this paper named the digital economy form before the Internet of Things economy as Internet economy.

Internet economy has many forms, flow industrialization is the common feature of these forms. The forms of the Internet economy include platform economy, *Live commerce*, etc, and these forms have a variety of profit models. All kinds of economy has a common feature, that is, flow industrialization. Turning huge flow into actual wealth is its final form, presenting a form of flow economy. Therefore, the most important work of these Internet enterprises is to obtain a large amount of market flow, and then the flow realization, to get the opportunity to come true value or profit. Pinduoduo's strategy to earn flow is to take advantage of the fact that e-commerce platforms such as Taobao and JD are fiercely competing for the consumer market in China's first - and second-tier cities, and to do the opposite, placing its main consumer market in third - and fourth-tier cities. With the flow of wechat, many middle-aged and elderly people learn to buy, Group Bargaining, it won a lot of users. The success of the strategy has enabled Pinduoduo to come from behind in the fierce e-commerce competition, and the pattern of China's e-commerce field has gradually changed from two competing to three. Baidu's huge flow was largely thanks to the "Great Wall Firewall" established by the National Computer Network and Information Security Management Center in June 1996, which earned it vitality under the pressure of search engines giants such as Google and Yahoo. After obtaining a huge amount of flow, the way to Cash flow realization is not only a portion of the revenue from selling technical services to websites, but more importantly, the advertising revenue obtained through bidding rankings and other means. Based on its huge domestic flow advantage, Baidu has become one of the top global internet companies.

The development of Internet economy benefits from not only the development of network digital technology, but also the improvement of market efficiency by reducing transaction costs. In the new era, the development of market economy can not eaten the dividend only by price signals guiding resource allocation. The further development of economic society requires a more unified large market, a more smooth communication channel between producers and consumers, and higher market efficiency. The popularization of micro home computers, especially smart phones, coupled with the arrival of 4G and 5G era, has realized the data transmission speed of 100Mb/s, even 10Gb/s, and remote voice and video can be clearly transmitted. It can meet the requirements of lower delay, laying the technical foundation for the formation of the electronic market. The high efficiency of electronic market is the economic basis of the development of Internet economy characterized by flow economy. Huang Hao carefully studied the efficiency of the electronic market in 2014. He believed that the intelligent search engine has improved the retrieval and matching ability of commodity information and reduced the search cost. The aggregate function of the e-commerce market makes its scale far exceed the traditional market, and the market efficiency of the electronic market is far higher than that of the traditional market. The platforms under the network traffic economy have achieved rapid growth while improving the macroeconomic efficiency. Lots of Internet companies, with the exception of a few such as NetEase and Tencent offering online games that add new utility to consumers to gain growth, reduce transaction costs in different aspects of the market. QQ and wechat have established social networking platforms and removed space restrictions for general information communication. Taobao, JD, Pinduoduo and other aggregators of a large number of consumers and merchants, reducing the market search costs. In recent years, the popular *Live commerce* has become a market favorite by further draw close the relationship sellers between consumers. Meituan, Ele and Didi Dache share the same economic principle.

Increasing returns to scale is the main feature of Internet economy, industry concentration is the inevitable result of Internet economy development. In addition to charging directly for products and services, there are also multiple profit models of Internet economy, such as sharing with operators, charging for advertising, charging transaction commission, charging for value-added advertising, and charging for industrial chain support. However, the key node of all these profit models is to enhance the number of customers, namely the flow. Increased flow can not only increase revenue, but also

provide value-added services through big data analysis. For example, the food recommendation for takeout ordering, and the commodity distribution on the web page rearranged by the e-commerce platform according to the search path of consumers. Therefore, the size of flow is the lifeline of Internet enterprises, who grasps the flow, who grasps the fate of wealth. Flow is also the basis of the difference between the Internet economy and the real economy. To gain attention and earn flow is the premise of the establishment of Internet enterprises. The larger the flow, the larger the scale of the Internet economy, enterprises can realize higher profits, and it give higher welfare to consumers. Moreover, the study finds that the Internet economy also produces a "winner-takes-all" phenomenon due to the excessive inertia of *Network externality*, that is, user resources tend to flow to the top enterprises with a large market share, so the top enterprises have a great influence on the Internet economy. On the contrary, only a sufficient market size can produce this kind of Internet-based digital economy, because the start-up capital to enter the digital market is relatively high, and such start-up capital is a precipitated cost for enterprises. For example, early related software development expenses. Internet economy is an industry with increasing returns to scale. Only when sufficient scale is reached, it can not only offset the precipitation cost of early investment, but also generate huge benefits. According to the survey, by December 2022, the number of Chinese netizens has reached 1.067 billion, and most of them have a good acceptance of the Internet economy, which is an important basis for the development of China's digital economy.

In the development process of Internet economy, consumers have no bear terminal equipment promotion costs. As mentioned above, the huge netizen base is the foundation and prerequisite for the development of Internet economy. In the early 1980s, China Computer Association and China Central Television hired an expert Tan Haoqiang to teach BASIC language by means of television, so as to popularize computer knowledge. Computer knowledge was quickly popularized among computer majors, some in-service scientific and technical personnel and management personnel. In the 1990s, with the advent of microcomputers and Windows and Office software, the Ministry of Education launched the National Computer Rank Examination (NCRE), the National Computer Application Technology Examination (NIT), The National Computer Information High Technology Examination (OSTA) was launched by the Ministry of Labor. Chinese computers have been popularized to civil servants, on-the-job cadres and general intellectuals. In the 21st century, with the introduction of computer courses in primary and middle schools, computers began to spread to primary and middle school students. The first batch of Chinese smartphones appeared in 2007, and it wasn't until 2009, when they became domestically produced, and 2012, when smartphone prices began to fall, that they became widely available in some major cities. The above mentioned popularity of Chinese computers and smart phones is not the result of the development of Internet companies. but more importantly, the premise is that there is a huge netizen base before the rapid development of Internet economy. Although the development of the Internet economy has further promoted the popularization of computers and smart phones, the huge netizen base is still a prerequisite for the development of the Internet economy. The logic of the development of Internet economy is that network companies do not actually bear the cost of the popularization and promotion of terminal hardware, and consumers do not pay the cost of terminal hardware because of the development of a certain network company's business. It can be said that the promotion of consumer terminal hardware has nothing to do with a single network company or a single network business.

According to the above description of the development of Chinese Internet economy, the following important characteristics of its development can be obtained:

2.1 First of all, the main economic problem solved by the development of Internet economy is to reduce the transaction cost of market economy.

Transaction cost is the cost of market operation, which is the main symbol of market operation efficiency. In the market economy, the high transaction cost is the main obstacle to the improvement of economic benefit of all enterprises. The Internet can benefit all economic individuals through its extremely fast information processing capabilities and the value-added services provided by big data

analysis. Although there are some differences in the forms of transaction costs in different enterprises, the connotation is consistent. Transaction costs are welfare losses for every participant in the market economy, so the Internet economy can create value-added services for every individual economy, which is the key to the rapid popularization of the Internet economy.

2.2 Secondly, scale is the key to the development of Internet economy.

The Internet economy presents a typical feature of increasing returns to scale. The larger the scale, the higher the benefit of enterprises, and the higher the value-added services for consumers. So most web companies start out with flow and attention. In China, the rapid development of Internet companies and the creation of a miracle of wealth not only benefit from the huge population of Internet users, but also benefit from these groups constitute a unified market. The Internet users are almost not segmented based on a certain standard, including related logistics companies are also relatively unified market. The great unity state is conducive to the transformation of the huge netizen base into a great unity market, which meets the needs of the development of network companies.

2.3 Another, in the development process of Internet economy, the promotion of network terminal equipment has nothing to do with the development of network companies.

If the promotion of network terminal equipment has to be provided with the supply side or the demand side of a network service, this will be a huge expense. In the process of the development of Internet economy, network companies do not bear the cost of network terminal equipment promotion, and consumers do not bear the cost directly because of the development of a network service is the premise of the rapid development of Internet economy. Although a large number of improvements in the quality of network services have helped to promote terminal devices, there were already a large number of computer or smartphone users in the market at the beginning of the development of Internet companies. As long as network companies focus on the level and quality of network service and expand its attention, so that in the process of the development of the Internet, the network company's promotion costs are relatively low.

3. The development of Internet of Things economy Comparing Internet Economy

(1) On the Internet of Things economy

Bill Gates mentioned the concept of the Internet of Things in his 1995 book *The Road Ahead*. In 2003, the American Technology Review proposed that sensor network technology would be the first of the ten technologies that will change people's lives in the future. The Internet of things (IoT), or "Internet of everything", is an extension and expansion of the network on the basis of the Internet. It combines various information sensing devices with the network and forms a huge network to realize the interconnection of people, machines and things at any time and anywhere. On July 13, 2021, the Internet Society of China released the "China Internet Development Report (2021)". The market size of the Internet of things reached 1.7 trillion yuan, and the market size of artificial intelligence reached 303.1 billion yuan. In September 2021, the Ministry of Industry and Information Technology and other eight departments issued the Three-year Action Plan for the Construction of New IoT Infrastructure (2021-2023), which made it clear that by the end of 2023, new IoT infrastructure will be initially built in major cities in China, and the foundation of social modernization governance, industrial digital transformation and people's livelihood consumption upgrading will be more stable. In May 2022, Jiangxi Province issued the Implementation Plan for Accelerating the Construction of New Iot Infrastructure in Jiangxi Province.

It is generally believed that the economy of the Internet of Things is divided into five levels: the first layer is the equipment layer, which involves a large number of sensors and hardware products with data communication capabilities. Therefore, enterprises producing related equipment are an important link in the industrial chain of the Internet of Things. The second layer is the network layer,

which mainly involves network service providers. Network service providers complete the integration of the Internet of Things with the Internet and mobile Internet, so that the Internet of Things can play a greater role through the Internet, so as to facilitate the use and management of users. The third layer is the Internet of Things platform layer. The Internet of Things platform is the core of the whole Internet of Things architecture. With the gradual maturity of the Internet of Things platform technology, the resource integration ability of the Internet of Things platform will be gradually improved. The fourth layer is the data analysis layer. The data analysis layer involves big data, and the industry chain of big data has gradually formed, including data collection, storage, arrangement, analysis and presentation. The fifth layer is "application", and application will eventually lead to artificial intelligence, so artificial intelligence is also an important link in the industrial chain of the Internet of Things.

In recent years, the Internet of Things economy has achieved rapid development. He Xuming, chairman of the Executive Committee of the World Internet of Things Conference, pointed out in his keynote report of the 7th World Internet of Things Conference in 2022 that government agencies and enterprises in nearly 100 countries and regions have set up more than 200,000 special institutions, research institutes and social organizations for the exploration and application of the Internet of Things. It is estimated that the annual output value of the global Internet of Things economy exceeds US \$8 trillion, with an annual increment of about 20%. Investment in Infrastructure of the Internet of things exceeded the sum of the past 10 years, and more than 700,000 application of the Internet of things platforms and public life service systems have been developed worldwide. IoT Analytics, a provider of market insights and strategic business intelligence, recently updated its "IoT Enterprise Spending Tracking Update Report" to introduce the growth of the Internet of things market in 2022 and forecast the development of the Internet of things market in 2023-2027. According to the report, total global corporate spending on the Internet of Things grew 21.5 percent to \$201 billion in 2022, and the global Internet of Things market size is expected to grow by 19 percent in 2023. The report also predicts that the global Internet of Things market size will grow at a compound annual growth rate of 19.4 percent from 2022 to 2027 and reach \$483 billion in 2027. The economic development of the Internet of Things in our country obviously walks in the forefront of the world. By the end of 2022, the number of mobile Internet of things connections in China reached 1.845 billion, a net increase of 447 million over the end of 2021 and 161 million more than the number of mobile phone users. For the first time, the number of connected things exceeded the number of people, accounting for 70% of the total number of Internet of Things users worldwide. Wu Hequan, academician of the Chinese Academy of Engineering, said in the "5G Enabled IoT" academician report that the number of global Internet of things devices will reach 27.1 billion in 2025, and China's non-cellular Internet of things growth rate will reach 32.5%, much higher than the global growth rate. China accounts for 30% of the world's Internet of things and 75% of the world's cellular Internet of things.

(2) Problems in the development of Internet of Things economy under the comparison of Internet economy

The Internet of Things is a new engine driving the development of the world economy and society, a new concept of the new global economy carrier with the deep integration of digital economy, real economy and intelligent technology, and a method to build the market system of the digital economy supported by the Internet of Things. UN Secretary-General Antonio Guterres believes that "the Internet of Things holds great potential for sustainable development and is transforming people's lives and livelihoods". Although the Internet of Things economy has achieved considerable development results, according to the development characteristics of the Internet economy, the Internet of Things economy itself and the market structure still have a certain degree of defects. Supposing solving these problems, the Internet of Things economy will make a greater contribution to the economy.

First of all, the economic problems solved by the Internet of Things economy are more complex than that of the Internet economy. Different from the single function of the Internet economy, which mainly reduces market transaction costs, the Internet of Things economy mainly solves the upgrading of consumption and strengthens the connection between things. Its functions are diversified and more

complex. The complexity of the economic functions of the Internet of Things is destined to make it difficult to achieve smooth sailing in the process of its expansion. For example, in terms of the consumption upgrading function of the Internet of Things, due to the diversity of consumption utility, not everyone likes the direction of the Internet of Things upgrading consumption, or consumers will exaggerate the impact of other aspects of consumption utility brought by the Internet of Things upgrading consumption, thus hindering the expansion of the Internet of Things economy. Sweeping robot is a typical economic product of the Internet of Things. Its excellent performance such as the liberation of people's hands has become the representative of new intelligent home appliances and once became the darling of the market. However, with the sales growth period of the technology, as a consumer of household appliances, consumers can not stand all kinds of small problems of this appliance, and gradually do not want to pay for the high premium of the sweeping machine. These include poor mopping, occasional collisions, or aggressive obstacle avoidance, occasional jams, obvious water stains, and poor performance reviews for handling cluttered environments. In addition, the robot is noisy, endurance is poor, not durable, service life is not long, and cleaning supplies.

Secondly, the Internet of Things economic market segmentation is serious. As mentioned before, scale is the key to the development of Internet economy. Different from other industries with large scale, which can share costs and generate increasing returns, Internet economy can also use big data to generate value-added services for consumers and additional returns for producers when it reaches a sufficient scale. However, unlike the Internet economy, which has formed a unified network foundation, the market of the Internet of Things economy is fragmented, which is not conducive to the rapid development and growth of the Internet of Things economy. In terms of the four layers of the Internet of Things, namely the perception layer, the transport layer, the platform layer and the application layer, each layer has a large number of players. The industry chain players related to the sensing layer chip include Optica Technology, Semtech Electronics, Guangxin Microelectronics, Huawei Hisex, Mediatek, Unigroup Zhanrui, etc., and the industry chain players related to cellular modules include Yuanyuan Communication, Guanghetong, Meige Intelligence, Rihai Intelligence, Gaoxin, Youfang Technology, Hezhou Communication, etc. Perception equipment related industry chain players are Obi Zhongguang, Geer, Hanwei Technology, Honeywell, Lianchuang Electronics, Rui Sheng Technology, Rui Chuang Wena and so on. Transport layer hardware carrier players include Huawei, ZTE, Ericsson, Arm, Dell Technology, HP, Lenovo, etc. Software platform key players include AWS Wavelength, Azure IoT Edge, Ali Cloud Link Edge, Baidu Cloud BIE Smart Edge, etc. The main players of the platform layer are Ali Cloud link platform, JD Xiaojingyu, Tencent Cloud IoT Explorer, Xiaomi IoT platform, IBM Watson IoT, ThingWorx. At the application level, a hundred flowers bloom. Some of these players do belong to different business scopes which are difficult to be compatible with, and more of them belong to the same business scope which is also incompatible, showing that the whole market is fragmented, which makes it difficult for the Internet of Things economy to be popularized and expanded rapidly despite the huge market.

In addition, the Internet of Things economic promotion needs to bear the excessive cost of terminal equipment. As mentioned above, the development of Internet economy is based on the certain popularity of computers or smart phones. Even if the development of Internet economy has an effect on the popularity of computers and smart phones in network terminals, consumers are willing to bear the cost of network terminal equipment under the full understanding of the utility of network economy. The development of Internet of Things economy is based on the absence of terminal equipment, and the cost of Internet of Things terminal equipment is a difficult problem for the development of Internet of Things economy. If the Internet of Things economy service providers bear the cost of terminal equipment, there is no doubt that excessive promotion costs actually limit the development of Internet of Things economy services. However, consumers do not know the utility of the new final service and are unwilling to bear the cost. For example, the initial purchase of the sweeping robot is mostly for the consumers who are interested in new technology. However, due to the uncertainty of utility, it is difficult to fully meet the needs of consumers at the beginning of the promotion of Internet of Things economic products, especially the high-level services after big data analysis. As a result, the

development of the Internet of Things economy may experience a relatively long period of flat growth, and even the entire industrial chain may die in the case of inconsistent development cycles in different parts of the industrial chain.

4. Analysis on the development status of Internet of Things economy in Jiangxi Province

While the national macro level and all provinces and cities are laying out the Internet of Things economy, decision-making institutions in Jiangxi Province also attach great importance to the Internet of Things economy and use various means to lead the development of the Internet of Things economy in Jiangxi Province. Under the guidance of relevant policies, the Internet of Things in Jiangxi Province has achieved rapid development in many aspects.

(1) A number of institutional foundations have been established for the development of Internet of Things economy. In 2018, the Implementation Opinions of Jiangxi Provincial People's Government on Accelerating the Construction of the Internet of Things (Jiangxi) issued that the development direction of information technology is to realize the interconnection of everything and form a network of free communication among people, data and equipment. It called for "vigorously developing the digital economy represented by the Internet of Things, speeding up the construction of a modern economic system and a smarter Jiangxi, and promoting high-quality leap-forward economic development". At the same time, Jiangxi has successively issued the Mobile Internet of Things Development Plan of Jiangxi Province (2017-2020). In 2019, it formulated the Five-Year Action Plan for Leapfrog Development of Mobile Internet of Things Industry in Jiangxi Province (around 2019-2023), decided to accelerate the application and promotion of technology, and actively promoted the application of new technologies such as mobile Internet of Things and big data in combination with the construction of intelligent manufacturing and industrial Internet and the action of "Cloud for all enterprises". Enterprises are encouraged to carry out the Internet of Things applications such as machine and equipment interconnection, product remote monitoring, energy conservation and environmental protection monitoring, and smart logistics, so as to upgrade their digital, networked and intelligent level. In September 2021, Jiangxi Provincial Department of Science and Technology reissued the "Zhilian Jiangxi. Jiangxi Mobile Internet of Things Development Three-year Action Plan (2021-2023)", which proposed the development goals of the Internet of Things such as "three-dimensional infrastructure, intelligent cross-border application, intelligent industrial transformation, systematic innovation platform, and value-oriented data elements". At the same time, several key projects such as "Demonstration Project of cross-border integration and Innovative Application of social Governance", "Demonstration Project of cross-border integration and innovative Application of Intelligent Life and livelihood Services", "Agricultural digital transformation and upgrading Project", "Industrial Internet Innovation and Upgrading Project" and "Service Innovation and Development and upgrading Project" will be built. In 2022, the Implementation Plan for Accelerating the Construction of New the Internet of Things Infrastructure in Jiangxi Province was issued to accelerate the construction of new the Internet of Things infrastructure in Jiangxi Province, giving full play to the role of the Internet of Things in promoting the development of digital economy and enabling the transformation and upgrading of traditional industries.

(2) The electronic information industry develops rapidly. Jiangxi is planning "one axis, four cities and ten bases" to build Jiangxi's characteristic regional brand and industrial cluster of the Internet of Things (taking Beijing-Kowloon high-speed Railway as "one axis" to build Jiujiang City, Nanchang City, Ji'an City and Ganzhou City "four cities" electronic information industry city, focusing on cultivating ten electronic information industry bases). In 2021, the revenue of Jiangxi's electronic information industry exceeded 650 billion yuan, and in 2022, it broke through again, reaching 1.03 trillion yuan. There are about 2000 electronic information enterprises above designated size in the whole province, among which 11 enterprises exceed 10 billion yuan, such as Huaqin Electronics, Lishun Intelligent Manufacturing, Helitai, Oufeiguang, Mu Linsen, Meichen Telecom and

Tongxingda. The four leading industries of electronic components, intelligent terminals, photovoltaic lithium electricity and optical fiber cable have been formed. Jiangxi has been approved to set up two national innovation centers for rare earth functional materials and virtual reality, and set up a number of innovation platforms and research and development institutions such as digital fusion, luminous materials and information security technology innovation consortiums in three provinces. Jiangxi's electronic information industry keeps innovating and upgrading. Among them, the electro-optic conversion rate of yellow LED with silicon substrate reached 27.9%, far higher than the highest level of 9.6% in foreign countries, and Jiangxi Province achieved the "local leader" in the electronic information industry in the world.

(3) Internet of Things infrastructure is accelerating. Network is the foundation for the development of the Internet of Things economy, especially 5G base stations, NB-IoT base stations, enhanced machine communication network (eMTC) base stations. By the end of 2021, China Mobile has realized that the gigabit optical network in Jiangxi Province has the capacity to cover 2.8 million households, and the scale of 10-gigabit passive optical network (10G-PON) and above has exceeded 70,000 ports. In 2022, Jiangxi will build 10,630 new 5G base stations and put 14,921 into service. A total of 52,937 5G base stations have been built and 75,637 have been opened, with more than 12 5G base stations for every 10,000 people. 5G network access has been realized ahead of schedule, and the number of 5G users has jumped to 15.993 million. It is planned to open more than 68,000 5G base stations by 2023, with the number of people connected to 5G terminals reaching more than 17.7 million. In 2021, there will be 73,000 narrowband Internet of Things (NB-IoT) base stations and 78,000 Enhanced machine communication network (eMTC) base stations, ranking first in the central region of China, and achieving full coverage of the whole province. The Implementation Plan for Accelerating the Construction of New Internet of Thing Infrastructure issued by Jiangxi Province proposes that "by the end of 2023, the Internet of Things infrastructure will be further improved, areas above the county level will basically have gigabit access capacity, and 5G networks will cover urban and rural areas. "An integrated ecosystem of NB-IoT(narrow band Internet of Things), eMTC(enhanced machine communication), 4G and 5G will be developed in tandem."

(4) Internet of Things is expanding in Jiangxi Province. By July 2022, there have been more than 140,000 cloud enterprises in Jiangxi Province. The application rate of industrial cloud platform of enterprises has reached 42.2%, the numerical control rate of key processes has reached 50.7%, and the penetration rate of digital R&D and design tools has reached 71.7%. In terms of platform, the convergence effect of mobile Internet of Things platform is remarkable. A number of public service, innovation application and exchange and cooperation platforms have been established, such as Yingtian (Jiangxi) Internet of Things platform, Yingtian Industrial Cloud platform, "03 Special" public application service platform, Jiangxi Mobile Internet of Things Cloud platform, intelligent agriculture Internet of Things platform, Ganzhou Industrial cloud platform, Jiangxi Internet of Things application industry incubation platform, effectively supporting the Internet of Things application and industrial development. In 2022, Jiangxi Province announced the cultivation of 53 industrial Internet platforms, of which seven platforms, including China Telecom Weiyang WINGplat Industrial Internet platform, Jiangxi Mobile Industrial Internet Platform, Jiangxi Unicom Industrial Internet Platform and ECMS Electronic Industry Collaborative Manufacturing Ecological Community (electronic information industry), are the key cultivation platforms. In terms of industrial application, 196 "5G+ industrial Internet" projects have been built or are under construction in the province. In the 2021 the Internet of Thing Demonstration project announced by the Ministry of Industry and Information Technology in 2022, four enterprise projects of Jiangxi Sanchuan Intelligent Technology Co., Ltd. based on 5G technology integrated application and promotion of smart water meter and smart water platform were evaluated as integrated application innovation demonstration projects. Chaoyang Jushengtai (Xinfeng) Technology Co., LTD., intelligent voice print sensor research and development and industrialization of two enterprise projects assessed as key technology public relations demonstration projects.

From the above development status, through planning and precise force, the Internet of Things economy in Jiangxi Province has made great achievements in recent years, which lays a good

foundation for the high-quality growth of the Internet of Things economy in Jiangxi Province and even the entire regional economy. It also proves that Jiangxi Province, as the second echelon of the regional economy, can also achieve a breakthrough in the forefront of economic development. However, it must be clear that according to the attributes of Internet of Things economy and its role in regional economy, Jiangxi Province will be the main track of regional economic competition in a long period of time, and Jiangxi Province will face fierce competition. At the same time, according to the development experience of Internet economy, the Internet of Things economy may show a "winner-takes-all" preemptive game law in most fields, only a few leading enterprises can survive, and the distance between the leading enterprises and the tail enterprises will be widening. There are still many problems in the development of Internet of Things economy in Jiangxi Province. For example, industrial integration type ecological development has not yet formed, the leading industry of the Internet of Things industry has not been formed, the degree of industrial agglomeration is not enough, the scale effect is not obvious, the industrial chain is short, and the structure is single. The level of integration is not high. As of November 2022, there are only 8 AA level enterprises and 1 AAA level enterprises in Jiangxi Province, which is not only a big gap with the leading Jiangsu Province, but also no ranking and low among the central provinces. Jiangxi Province still has a long way to go in the development of the Internet of Things economy.

5. Policy suggestions on Internet of Things economic development in Jiangxi Province

(1) Internet of Things application should be regarded as an important direction for the development of Internet of Things economy in Jiangxi Province. There is no doubt that the Internet of Things economy has become the main track of regional economic competition, each link is full of capital, technology and talent intensive. It is not wise to evenly invest resources in the five layers of the Internet of Things economy: the device layer, the network layer, the Internet of Things platform layer, the data analysis layer and the application layer. Jiangxi Province's economic development level belongs to the second echelon in the whole country, and its stock of capital, technical knowledge and talents is not dominant. It can be predicted that it is difficult to keep up with the first echelon in the late increment of these production factors. In contrast, the development of traditional industries in Jiangxi Province has no obvious disadvantages, and with the continuous development of industrial transfer, traditional industries gradually form a trend of gathering in Jiangxi Province. This paper believes that the application of the Internet of Things should be taken as the main direction of the development of the Internet of Things economy in Jiangxi Province, vigorously promote the development of "5G+ agriculture" and "5G+ industry", empower traditional industries with artificial intelligence, enhance the production efficiency of traditional industries, and even make traditional industries glow with new efficiency with the support of artificial intelligence, which is feasible for the development of the Internet of Things economy in Jiangxi Province. And has the development direction of comparative advantage.

(2) Encourage enterprises to design multiple pricing forms on the supply of Internet of Things terminal. As mentioned above, the high burden of the Internet of Thing terminal equipment restricts the development of the Internet of Thing industry. However, the reason why consumers are not willing to bear higher costs of Internet of Things terminal equipment is that consumers have asymmetric information about the utility value-added generated by Internet of Things devices (for "5G+ industry", it is profit value-added). Due to the disadvantage in information, consumers use the weighted average value of high value-added and low value-added brought by the inefficiency of the Internet of Thing devices to evaluate their actual utility, and make a decision to bear the cost by comparing it with the cost of the Internet of Things terminal equipment, which reduces their desire to buy and blocks the expansion of the scale of the Internet of things economy. Similar to other Internet economies, the Internet of Things economy, which is highly dependent on the advantages of scale, is more affected by such asymmetric information than traditional industries. Therefore, in the process

of the development of the Internet of Things economy, the Internet of Things enterprises in Jiangxi Province should be encouraged to design a variety of pricing strategies for the Internet of things terminal devices, which should not only reduce the entry threshold of the Internet of things services for consumers, but also reduce the risk of consumers using the Internet of Things terminal devices, and take the expansion of the scale of the Internet of Things economy as the core strategy of the industry development.

(3) In the development process of the Internet of Things economy, attention should be paid to the appropriate concentration of resources. Increasing returns to scale is the essential feature of Internet economy. A large enough scale can not only bring higher returns to Internet of Things enterprises, but also make use of big data to add value to consumers. In the early stage of the development of the Internet of Things industry, due to the low entry threshold, there are too many similar enterprises that are far from the optimal scale, and there will be too much ineffective competition among them for survival. These competitions not only block the scale expansion of the promising Internet of Things enterprises, but also reduce the market efficiency of the Internet of things in Jiangxi Province. Therefore, in the process of the development of the Internet of Things economy, Jiangxi Province should concentrate its resources appropriately and focus on those enterprises that have the opportunity to become the leader, improve their scale expansion speed, enhance the efficiency of the Internet of things market in Jiangxi Province, and give Jiangxi Province an advantage in the main track of the regional economy.

6. Conclusions

The Internet of Things economy is an important field leading the development of regional economy. However, the development of the Internet of Things economy is still limited by the excessive complexity of the economic problems solved, the serious market segmentation, and the high cost of promoting the Internet of Things terminal equipment.

Which focusing on the application link, encouraging enterprises to set up a variety of terminal equipment price formation mechanisms, and appropriately concentrating resources, are conducive to the development of the Internet of Things economy in Jiangxi Province.

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