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Opportunities, challenges and countermeasures of the development of big data industry in the state-level Nanchang Economic and Technological Development Zone

Huang Xiao Ping*, Beijing Institute of Technology, Beijing, China; Jiangxi Institute of Economic Administrators, Jiangxi, China

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Abstract

The global information technology revolution is promoting the development of new economy at the core of big data, and the big data industry has become the strategic commanding point in competition among countries. Development of the large data industry in the state-level Nanchang Economic and Technological Development Zone has a brilliant future. The state-level Nanchang Economic and Technological Development Zone should focus on the development of big data services, which are related to the '3 + X' industry system and big data products manufacturing. At the same time, the state-level Nanchang Economic and Technological Development Zone should plan the implementation path, focusing on the implementation of infrastructure construction, industrial training, strengthening the ranks of personnel, investment and six other projects. Finally, state-level Nanchang Economic and Technological Development Zone should put forward and carry out measures from the following five perspectives: perfecting organisation mechanism, reinforcing policy assurance, improving the supporting industries and optimising the investment environment.

Keywords: State level, big data, industry, opportunity, countermeasures.

* ADDRESS FOR CORRESPONDENCE: Huang Xiao Ping, Beijing Institute of Technology, Beijing, China.
E-mail address: zouwenjian@outlook.com

1. Introduction

The global information technology revolution is promoting the development of big data industries and cultivating new economic growth points. Adhering to the developing ideology of 'innovation, harmony, green, open, sharing', the state-level Nanchang Economic and Technological Development Zone grasps and utilises a new round of strategic opportunities brought about by the global technological revolution and the industrial revolution, and implements development strategies of national manufacturing power, network power, big data, Internet, etc. At the core of strengthening the ability of innovation and adhering to the needs of application, the state-level Nanchang Economic and Technological Development Zone has developed high-end links with the big data industry, optimising the development environment, expanding leading industry, accelerating the agglomeration of innovative resources and promoting the development of big data industry and the level of application service. The state-level Nanchang Economic and Technological Development Zone will become a big data industry area with international competitiveness and renowned as the leading class in Jiangxi and top-class in the nation. It will support the transformation of the traditional industry and cultivate new economic development momentum.

2. Significance of the development of the big data industry in the state-level Nanchang Economic and Technological Development Zone

2.1. Big data industry has become a new point in economic and social development

In 2015, the scale of the big data industry in China had reached 110.5 billion yuan, which increased by 44.1% when compared with the same period of last year. In the near future, the big data industry will keep increasing quickly and will become an important strength in promoting the economic and social development. Therefore, the big data industry has become a strategic commanding point in accelerating competition among countries. Many developed countries and areas, such as America, Japan and Europe, have reinforced the development of the big data industry in succession and consider it as important strength in racing to control a new round of competition and increasing comprehensive competitiveness. For instance, *the Big Data Research and Development* came out in America, constantly accelerating the research progress of big data. *The Declaration of Establishing a Top IT Country* came out in Japan, which comprehensively clarified new IT strategies in Japan with public and big data development in 2013–2020.

2.2. Development of the big data industry in the state-level Nanchang Economic and Technological Development Zone is beneficial for building up a new industry system

As the core field in the global new round of scientific and industrial revolution, big data will become the inevitable choice in building up the modern industry system in the state-level Nanchang Economic and Technological Development Zone. At present, the state-level Nanchang Economic and Technological Development Zone has informed of the '3 + X' industry development mode in which electronic information, new energy car, car accessories, medicine and food industry are the leading industries, and have formed five important industry bases, including national biological medicine industry, Jiangxi electronic industry base, equipment manufacturing industry base, home appliance industry base and car and accessories industry base. During the 13 'Five years' period, the state-level Nanchang Economic and Technological Development Zone will speed up the implementation of the strategy of the 'strong industries area' and further optimise the industrial structure, promote the '3 + X' advanced manufacturing industry, actively cultivate strategic emerging industries and promote modern service industry. In this process, large data will play an important role in greatly promoting regional industrial structure, improving the innovation ability, deepening radiation effects and help the economic development zone accelerate the construction of the modern industry system which combines economic and social efficiency.

2.3. Development of big data in the state-level Nanchang Economic and Technological Development Zone will be beneficial for building up new economic increasing points

The big data industry is the important aspect in the new-generation information and technology industry and has strong penetrability. It is beneficial for the transformation of key industries in the state-level Nanchang Economic and Technological Development Zone, such as new energy vehicles, electronic information and medicine food, and is also beneficial for cultivating and updating emerging industries, such as household appliances and new materials. Therefore, the development of the big data industry in the state-level Nanchang Economic and Technological Development Zone helps to strengthen the supporting capability of information in various fields, including the economic and social field, grabbing the high ground in the industries' chain and development priority.

3. Two opportunities and challenges for developing the large data industry in the state-level Nanchang Economic and Technological Development Zone

3.1. Development opportunity

3.1.1. Countries, provinces and municipalities attach great importance to the development of big data industry and provide a good opportunity for the development of large data industries in state-level Nanchang Economic and Technological Development Zone

In the State Council, 'the 13th Five-Year National Strategic Emerging Industry Development Plan' and '13th Five-Year National Informatisation Plan', the development of big data is the main direction. It is proposed that a large data industry ecological system with international competitiveness will be formed by 2020. Jiangxi province, for the implementation of the national strategic layout, introduced the 'Jiangxi province to promote the development of big data implementation plan', 'on accelerating the Internet plus action plan'. Nanchang city in the '13th Five-Year' development plan will be the big data industry as the focus of development, and the introduction of the 'on creating' Nanchang Optics Valley 'decision' to promote the development of emerging industries' policy support files. The state-level Nanchang Economic and Technological Development Zone in Jiangxi Province as the first state-level economic and Technological Development Zone is currently and actively creating electronic information, new energy vehicles and pharmaceutical and food industry as the core of '3 + X' new industrial system, which provides a good opportunity for development and good industrial foundation for the development of Nanchang through the open area of big data industry.

3.1.2. State-level Nanchang Economic and Technological Development Zone has a good foundation for developing large data industries

First, the state-level Nanchang Economic and Technological Development Zone in the Ganjiang River District is the most powerful of the four groups, accounting for about 80% of the economy of Ganjiang River District, to fully enjoy the national district widely in taxation, investment, finance, industry, land, personnel and other aspects of the reform test right and preferential industrial policy.

Second, the state-level Nanchang Economic and Technological Development Zone has a good foundation for the development of large data industries. In 2016, the Nanchang Economic Development Zone had 2,641 enterprises, of which more than 160 were above scale enterprises. The value of more than 180 enterprises formed a 20 billion industrial cluster and 3 baiyiji industry clusters had a number of key enterprises in the new energy vehicles and auto parts manufacturing, medicine, food production and other fields. A strong demand for industrial transformation, upgrading of enterprises and the open area of development of the large data industry provides good soil resources and rich industry agglomeration advantages for the state-level Nanchang Economic and Technological Development Zone.

Third, ecological advantages of the state-level Nanchang Economic and Technological Development Zone with Meiling mountain, facing the Ganjiang River, are not only new eco-industrial park function

perfect, but has green liveable, geographical advantages. The state-level Nanchang Economic and Technological Development Zone is formed by water, land and air routes and railway consisting of 'four in one' of the modern comprehensive transport system. Jiangxi province has the biggest railway freight centre and integrated international bonded logistics centre. The economic corridor position is further highlighted and has laid the foundation for the state-level Nanchang Economic and Technological Development Zone, including the development of smart logistics and other large data, cloud computing and networking industry applications.

3.2. Face challenge

At the same time, development of the big data industry in the state-level Nanchang Economic and Technological Development Zone is also facing some urgent problems and challenges.

First, the layout of the industry is slow and the understanding of the big data industry is still not deep. The development of ideas and direction is still unclear. Most enterprise management concepts tend to be traditional; the degree of specialisation is not high; innovative consciousness, brand awareness and modern management consciousness need to be improved, and new technology and new concepts are not enough.

Second, the technological innovation capacity is limited; talent support capacity needs to be improved. The high-end technical talents and management talents are the core elements to support the development of emerging industries in the state-level Nanchang Economic and Technological Development Zone. However, there are more relevant institutions of higher learning and scientific research institutes, but due to technical innovation the ability is limited and needs to be improved; the personnel flow rate is high; the intelligence resources are still not enough to form a comparative advantage; and the surrounding provinces and cities have more competitive industry, talent support and incentive policies. This enables the state-level Nanchang Economic and Technological Development Zone to attract a large data industry and short talents bringing about tremendous pressure of the competition.

Third, the provinces and cities rushed to the layout, and the pressure of the competition is obvious. In the new round of development of the information technology boom, many provinces and cities all over the country are accelerating the development of the layout of a large data industry. Part of the region has formed a relatively complete industrial system and industrial agglomeration, integration and innovation achievements and fierce competition situation, for the development of state-level Nanchang Economic and Technological Development Zone through the open area of large numbers according to the industry to bring about enormous pressure.

4. Countermeasures for developing the large data industry in state-level Nanchang Economic and Technological Development Zone

4.1. Clear good development priorities

4.1.1. Systematically developing large data services

First, active layout of the large data access services. To carry out the network based on the Internet, data acquisition, data customisation business and cultivating crowd-sourcing, the mining and the crawling data collection business, for various industries especially automobiles, household appliances, photoelectricity, pharmaceutical and food industry, needs to obtain high value data consolidation.

Second, focusing on the development of large data analysis services. The introduction of a number of large enterprise data analysis and the construction of a large data analysis platform relies on these big data companies and big data analysis platform, data cleaning, analysis of mining and visualisation services for various industries and fields of service innovation, product development and marketing

operation, which provide the basis for the decision-making analysis report and other data products and intellectual achievements.

Third, innovation and development of large data visualisation services. The data visualisation technology research and development should be strengthened and data visualisation tool software provides users with excellent data visualisation effect and software and hardware integration of large data visualisation solutions.

Fourth, accelerate the development of big data information security business. To address the big data environment, focusing on information security threats, focusing on providing automotive networking, smart home and other key industries of information security solutions are carried out. The third-party testing and certification platform is established by carrying out testing, evaluation, certification and evaluation of the usability, reliability and security of big data.

4.1.2. Great efforts to develop large data industry services

First, grab the development of intelligent manufacturing services. Strengthen the application of large data technology in new energy automotive services, BeiDou navigation services, intelligent terminal research and development and biopharmaceutical research and development.

Second, we should actively innovate financial services in science and technology, encourage e-commerce and other platform enterprises to strengthen the development and utilisation of large data platform, innovative intelligent terminal application and enhance the payment and settlement of self-help loans, insurance and other embedded financial supply chain services. We should also explore the construction of Internet financial security, credit information big data platform, promote Internet financial enterprise credit information sharing, improve the risk prevention and control ability of Internet banking.

4.1.3. Actively promote the manufacture of large data products

First, accelerate the development of new intelligent terminal products. Based on the open area of the electronic information industry park such as Ou Feiguang, Shanghai Communications, Honglitronic and Kaso photoelectric, main leading enterprises should accelerate the new generation of mobile intelligent terminal product innovation and actively develop smart camera, intelligent mobile phone, tablet computer and smart watches, smart bracelet, virtual reality and other smart wearable equipment products.

Second, accelerate the development of intelligent cars and vehicle networking. Guide JMC and other automotive companies to cooperate with Internet companies, focusing on the development of navigation terminals, intelligent vehicle recorders, traffic information interactive terminals, vehicle connected entertainment terminals, vehicle video surveillance and other products.

4.2. Plan the implementation path

The state-level Nanchang Economic and Technological Development Zone develops large data industry, not only focusing on the development of goods, but also needs to plan the implementation of the path, focusing on the implementation of the six major projects.

4.2.1. Infrastructure construction project

First, speed up the construction of network infrastructure. Integrate the use of fibre into the home, WiFi and 4G technology, ahead of the layout of large-scale commercial 5G and IPv6 to encourage the construction and transformation of the next generation of Internet represented. Construct an intelligent network with a complete system, high-speed broadband and three networks in one, and innovate the mode of Telecom Access service.

Second, accelerate the construction of the wisdom Park infrastructure. Build a new intelligent park based on 'cloud, network and end', and include promoting the construction of energy Internet, to promote energy use equipment and energy efficiency. Promote the Internet of things, big data and other new technologies in the Nanchang open area to carry out the 'smart community', 'digital family' and the 'smart micro-grid' pilot.

4.2.2. Innovative ecological construction project

First, support the R&D and industrialisation of key technologies. Relying on the Nanchang Optics Valley Industrial Park and Nanchang Ming carpenter base project and other key projects, ahead of the layout of a number of large data and cutting-edge technologies and disruptive technology R&D projects, the construction of innovative technology development, incubation, transformation and diffusion mechanism, the rapid formation of new technology industry chain, industry to promote technological transformation and promotion of large-scale commercial applications are carried out.

Second, build an open, cooperative and innovative mechanism. Build an enterprise-oriented collaborative innovation system for production and research and create an enterprise innovation ecosystem. Jiangxi University of Finance and Economics, East China Jiaotong University and other universities should cultivate a number of collaborative innovation centres to explore the establishment of a global R&D centre, high-end laboratories and Enterprise Technology Research Institutes and other new research institutions, leading to the formation of a collaborative innovation network platform.

Third, optimise innovation, entrepreneurship and incubation services. Pig network, Tencent youth public record space, University Science and technology park public record and other 'double' bases should provide research and design, test, online operation, application and promotion, project financing, financial management, legal advice and other resources support services for start-up of small and microenterprises.

4.2.3. Key field demonstration project

First, the implementation of intelligent manufacturing applications pilot project. Around the industrial robot industry, new energy automobile manufacturing equipment, advanced rail transportation of high-end equipment and other fields should carry out network manufacturing, pilot promotion, network manufacturing, collaborative manufacturing and cloud manufacturing.

Second, implementation of the pharmaceutical industry's intelligent application propulsion project. In order for Jisheng pharmaceutical and Songhai Xinglin White, representatives of the modern Chinese medicine industry, to encourage the chemical pharmaceutical industry, high-end medical equipment and other areas should focus on the pharmaceutical industry; the pharmaceutical industry should also carry out intelligent application, making full use of big data technology to promote medical and food enterprise, lifecycle quality safety information traceability system and ensure medicine and food quality.

Third, implement the intelligent logistics application propulsion project. Based on the comprehensive bonded zone, leading Gang pier and railway logistics park area, the construction of international logistics public information platform data strengthen the data docking logistics centre, regional logistics and regional logistics platform in the backbone; third party logistics and distribution chain enterprises, collection and analysis of transport and storage, handling, packaging, distribution and the link again processing data, the value of data mining, to enhance the level of support for the deployment of intelligent logistics big data platform.

Fourth, implementation of the financial big data application demonstration project. Accelerate the introduction of third-party payments, all the chips and other online financial institutions; establish a regional Internet financial information and interactive online service platform to carry out financial

data processing and analysis of mining business; promote the financial and service level to extend the high-end financial services outsourcing.

4.2.4. Industrial main cultivation project

First, strengthen the competitiveness of leading enterprises. The implementation of data leading enterprises to accelerate the improvement of cultivation plan formulated a series of support and cultivate industry development policies, combined with domestic and foreign well-known big data enterprises or research institutions to carry out research on key technologies and solutions to jointly promote the research to the market application.

Second, support small and medium-sized enterprises bigger and stronger. For the '3 + X' system of industry-leading industries, the introduction of a number of small and medium-sized enterprises, small and micro-businesses, the development of a number of 'mosaic' economy, for its high efficiency and low-cost technology development, product promotion, e-commerce and other small and medium-sized enterprise big data services, the formation of small and medium enterprises start-up period and growth period of the whole life cycle support can help them become bigger and stronger.

4.2.5. Talent team strengthening project

First, promote personnel training work. Encourage enterprises and colleges in the joint creation of big data-related training courses to jointly establish a big data talent training base for the technology research and development, marketing, service and other aspects of personnel for job training and occupation education.

Second, strengthen the introduction of talent. To promote high-end talent 'technology + capital + project + team package introduction, focus on the introduction of technical skills, a number of big data industry in the field of technical personnel complex skills and knowledge professional skills and promote the gathering of high-end research and engineering talents.

Third, explore the way of flexible employment. Exploration of 'people in there, it was here that' the convergence of the talent of the flexible employment mode, through the redeployment, short-term or long-term employment, attachment, consultation, 'Sunday engineers' and 'overseas engineers' and a variety of flexible employment these high-end talents were used by the open area of Nanchang.

Fourth, optimise the environment for the development of talents. To create a comprehensive environment suitable for living and life and optimise area life, such as education and health facilities, provide personnel into the area of spouse employment, schooling of children, healthcare, household registration transfer service life and security.

4.2.6. Attract a bid for investments to promote projects

First, optimise the environment for attracting investment. The formation of a large data package supports the Industrial Development Zone's preferential policies, focuses on security of related enterprises with electricity, water, land, finance, financial approval and other aspects, ensuring that major projects attract and landing.

Second, select investment targets. Around the big data key aspects of investment, with the well-known domestic and foreign data, information technology service enterprises and scientific research institutions as the goal, goal setting scientific enterprise selection criteria to comprehensively evaluate the settled enterprises and strict access.

Third, strengthen the docking of key areas. The efficient formation of the professional investment team went to Beijing, Shanghai, Hangzhou and other big data industry-leading cities, who participated in the investment and trade fair, seminars or promotion activities, for the introduction of a number of well-known and landing data related to the large competitive enterprises and high-quality projects.

4.3. Implement good safeguard measures

4.3.1. Perfect organisational mechanism and strengthen policy guarantee

First, establishment of the organisational mechanisms of the leading group of the state-level Nanchang Economic and Technological Development Zone of the big data industry development; improve the working mechanism, a clear division of responsibilities, strengthen the coordination and support services to the project of large data industry, finance, by letter, science and technology and other government departments and strengthen supervision and evaluation.

Second, improve policy support. Work for promotion and application of big data products and services, operating standards, industrial investment, industrial park, hacker spaces, talent introduction and other aspects of policy incentives; increase the intensity of incentives for large enterprise data; reduce enterprise revenue, tax payment, human resources and other aspects of the request.

Third, strengthen financial support. For the provincial finance department to increase financial investment in the state-level Nanchang Economic and Technological Development Zone of large data industry, improve the government procurement of big data products and services supporting policies, improve the big data innovation investment and supervision mechanism, the implementation of government guidance funds, financial subsidies and the efficiency of the use of special funds.

4.3.2. Perfect industry matching and optimise investment environment

First, optimise the environment for the enterprise's development. Promote the 'light assets investment'; increase the allocation of large data enterprises supporting the construction of staff quarters; shift rooms and talent apartments; support the construction of non-productive projects such as life; and reduce the production of non-productive enterprises.

Second, promote supply and market demand docking. To encourage enterprises to adapt to the development of big data product market supply and demand; data demand and supply enterprises should focus on encouraging the development of manufacturing, modern commerce, intelligent logistics, Internet banking, smart terminals and smart cars in the field of intelligent service.

Third, we should make great efforts to promote cooperation in production and research. Strengthen the cooperation between government and industry research institutes, and encourage research institutes, institutions of higher learning and overseas R&D institutions to set up joint laboratories or R&D centres in the state-level Nanchang Economic and Technological Development Zone.

4.3.3. Mobilising social capital and promoting the integration of industry and finance

First, give full play to the role of government funds. Give full play to the guiding role of financial resources, integrate and expand existing support for innovation fund, attract social investment in big data related to construction projects and key projects and key projects supporting large data development and industrialisation.

Second, encourage the development of social capital. Actively explore the establishment of government guidance fund, risk guidance fund and theme industry investment fund, and vigorously attract VC firms and private equity funds stationed in the state-level Nanchang Economic and Technological Development Zone. At the same time, we should make good use of 'financial garden, credit chain', 'Silver Garden insurance' and syndicated loans.

4.3.4. Pay attention to information protection and strengthen safety guarantee

First, improve the information protection mechanism to establish and perfect the guarantee mechanism of information security based on big data technology, data acquisition and transmission; the storage of clear, open aspects of network security is the main responsibility scope and specific requirements, which effectively protect the data security.

Second, implement security measures to ensure the safety of large data public service platform; to ensure that in video monitoring, water quality monitoring, air monitoring, production safety and emergency relief, medical and health-related field data can be beneficial to the people's livelihood management and control to eliminate the potential safety hazard data.

4.3.5. Strengthen communication and promote industrial cooperation

First, strengthen the docking cooperation in the province. Seize the new opportunities for the development of Ganjiang River District; in other areas, the government encourages the park or strategic investment institutions to take custody of one zone model, with the state-level Nanchang Economic and Technological Development Zone cooperation to build big data Industrial Park to promote the development of a large data industry.

Second, strengthen the regional cooperation. Grab the 'The Belt and Road' construction and development of the Yangtze River economic belt with new opportunities, comprehensive docking and Shanghai Free Trade Zone to further deepen cooperation and exchanges with the Changsha Zhuzhou Xiangtan area, Yangtze River Delta, Pearl River Delta and the west coast of the Strait Economic Zone and other key areas and neighbouring provinces in the big data industry. Support the development of 'enclave economy', innovation, undertake industrial transfer mode and promote the overall transfer of large data-related industry chain and group transfer.

Third, expand the international cooperation space. R&D cooperation with international leading enterprises should guide enterprises to strengthen the product key technology, big data, support enterprises to compete in the global market, deepen the big data industry opening up, strengthen the cooperation with the domestic and foreign relevant organisations, organise relevant institutions and personnel to the domestic and foreign large numbers according to the exchange of learning.

5. Conclusion

As the first state-level Economic and Technological Development Zone in Jiangxi Province, the Nanchang Economic and Technological Development Zone owns the industrial base advantages, location advantages and higher education resource superiority, supporting industry advantages and ecological dominance. Meanwhile, it also confronts many challenges, such as the slow industry planning layout, lack of big enterprises, high pressure of competition etc. But generally speaking, the opportunities outweigh the challenges, development of the large data industry in state-level Nanchang Economic and Technological Development Zone has a brilliant future. The state-level Nanchang Economic and Technological Development Zone should make clear development priorities and focus on the development of big data services which is related to the '3 + X' industry system, promoting the manufacture of big data products. At the same time, the state-level Nanchang Economic and Technological Development Zone should plan the implementation path, focusing on the implementation of infrastructure construction, ecology innovation, key demonstration projects, training of industry personnel, strengthening personnel, investment and other six projects. Finally, the state-level Nanchang Economic and Technological Development Zone should put forward and carry out measures from the following five perspectives: perfecting the organisation mechanism and reinforcing policy assurance; improving industries support and optimising the investment environment; mobilising social capital and promoting the combination of industry and investment, paying attention to information protection and reinforcing security assurance; increasing communication; and promoting cooperation among industries.

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