

Ways to Develop the Strategic Emerging Industry in Hubei Based on the Third Industrial Revolution

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Abstract—The further development of the emerging industry in Hubei is urgent as the third industrial revolution begins. To develop the emerging industry more efficiently in Hubei, the paper first introduces the connotation and trend of the third industrial revolution, then analyzes the actual situation of the strategic emerging industry in Hubei. Next, the paper expounds the problems existing in the strategic emerging industry in Hubei. Finally, it puts forward some suggestions for further developing the strategic emerging industry in Hubei.

Keywords—strategic emerging industry; the third industrial revolution; Hubei

I. INTRODUCTION

The scholars at home and abroad have made a study of the third industrial revolution and the strategic emerging industry in the following aspects: Paul Markillie [1] from the UK made its concept clear and pointed out that the digital development of the manufacturing industry was symbol of the third industrial revolution. Jeremy Rifkin [2] from the US thought that the third industrial revolution might change greatly the production and living modes with the emerging of the renewable energy and the internet technology. Zheng Xu [3] from GE thought that the third industrial revolution might concern the following fields: the distributive energy and internet combination will make the renewable energy become the main stream of the energy supply; the optimization of the energy efficiency will provide revolutionary opportunities for improving the industrial process, innovating the equipment and integrating the industry and the information industry and so on. Zhaohui Li [4] made a research of the third industrial revolution in the angle of 3D printers. Huaqiao Ying [5] said that the Cloud Wisdom time was coming and it was the forefather of the third industrial revolution, etc. Ying Wang, Jianguo Xia [6] thought that the third industrial revolution based on the digital manufacturing needed lots of technological innovation skilled personnel, which would decide whether a nation might succeed or not in the third industrial revolution. Qunhui Huang, Jun He [7] thought that the third industrial revolution was a deeply economic and technological change integrated into the technology, administration and the institutional system. The rival among the businesses and the supply chain in various nations might be evolved into the competition among the industrial ecology system of which

the adaptation and dynamics was the key for a nation to win the competition. Some other scholars thought the combination between the urbanization and information was helpful to form some professional information service sectors that might bring lots of chances for the emerging industry, the new business model, etc. and then lead to the innovation in the regime and the mechanism.

The above-said scholars have expounded the third industrial revolution and the emerging industry in the aspects of digital, network, new energy, urbanization, information, 3D printers, etc. Their research has given us different angles to further explore the development of the emerging industry in Hubei.

II. CONNOTATION, FEATURES AND TREND OF THE THIRD INDUSTRIAL REVOLUTION

A. Connotation

The third industrial revolution, marked by the digital of the manufacturing industry, should have a solid foundation to integrate the internet technology and the recyclable energy. The transformation of the recyclable energy, scattered production and storage (in the form of hydrogen), the transport with a zero emissions and the distribution realized by way of internet will be the backbones of the new economic model of the third industrial revolution and all these may bring a vast change again to the production model and life style of the mankind [8].

B. Features

The mass customization based on the digital is the basic features of the third industrial revolution. The realization of the mass customization requires series of the coordinated progress in the technology and a successful industrialization and can satisfy the personified demands of the customer. In details, the following technology is needed [9]. One is the rapid prototyping technology. It means that the physical product can be printed out by 3D typing equipment. As the rapid prototyping equipment and the concerned mating consumables are becoming more and more matured, the price may drop. It is possible for a common family user to own a desktop factory.

Another is the new material technology. The new material technology makes the intensity, quality, performance and durability of the material better than those

of the traditional materials like nanotechnology. And this will raise the performance of the product and make it easy to process.

The third is the industrial robot technology. Its breakthrough will replace the worker of assuming the repeated and dry work with a high efficiency.

The fourth is the service based on the network. This technology can make an individual do online R&D, design, selection and improvement of the product. This will reduce the entry barriers and raise the communication efficiency among various bodies. The social manufacturing organization may be gradually formed [10].

Another feature is the change of the organizational structure. The organizational pattern of the third industrial revolution will become more downsizing, which is composed of thousands of the mid-small sized firms from all over the world. Together with the international business giant, they also play an important role in the commercial field. People can create information and share with others by the online social network. Also, they can produce recyclable energies and share by the energy network.

C. Trends

Production Mode of Mass Customization: New equipment based on the digitization is the foundation of the mass customization of the final products in the manufacturing industry. So, to possess the technology and production competence is vital in the new equipment. The rival advantages of the enterprise are originated from the use of the new equipment to produce the personified product with high added-value, and not from the low price competition.

Highly integration between the Manufacturing Industry and the Service Sector: The service sector related to the new equipment operation will mainly include R&D, design, IT, logistics and marketing, etc. To meet the need of the market in time, the manufacturing industry and the service sector should be integrated deeply. In this way, the need of the worker with low skill will drop while that of the high-skilled provider in the professional service may be further increased.

Change of the Global Economic Layout: The developed nations and regions with the first-mover advantages in technology, capital and market, etc. may become the main provider of the new equipment and new materials. Their substantial economy will be further strengthened. Their leading advantages in the top-end service field will be consolidated, too. As the manufacturing industry with high added value and the concerned service sector are concentrated in these nations and regions, they will enjoy the "structural dividend" in adjusting the industrial structure [11].

III. ACTUAL SITUATION OF THE STRATEGIC EMERGING INDUSTRY IN HUBEI

In the 10th Five-Year Plan in Hubei, the key emerging industries like electronic information, biological engineering, new materials and the integration of mechanic and electric industries have been rapidly developed. Then, series of policies to develop the key emerging industries have been

formulated and the correspondent mechanism formed. Some achievements in developing the strategic emerging industries in Hubei have been got.

A. *Hi-tech Industry Keeps Rising*

By the end of 2014, the manufacturing in the hi-tech rose quickly: the yearly added-value realized was 326.706 billion Yuan with a rise of 16.5% compared with that of the past year, occupying a proportion of 29.3% of the industrial added value of the enterprises above designated size [12]. In 2014, the hi-tech enterprises identified in Hubei were 958 [13].

B. *Self-dependent Innovation Competence Keeps Being Strengthened*

The innovative system in Hubei has been gradually improved: one national key scientific engineering project, sixteen national labs, 19 national engineering research centers and 249 enterprise technological centers, etc. Many innovative outcomes like high-class digital control system and high-power lasers have been got [14].

C. *Industrial Aggregation Goes On*

Three national hi-tech industrial bases like Wuhan Biological Industrial Base, Wuhan Information Industrial Base and Wuhan Synthetic Hi-tech Industrial Base have been established. Led by Wuhan, two industrial-band layouts along the Yangtze River and the Hanjiang River are being developed in clusters.

IV. PROBLEMS EXISTING IN THE INDUSTRIAL FIELDS TO BE DEVELOPED

A. *Lack of the Market-oriented Mechanism Leads to an Insufficiency of the Market for the Initial Hi-tech Products*

The development of the strategic emerging industry needs the governmental guidance, though the market plays a key role. At the start, the products from the strategic emerging industry may encounter massive difficulties in the market because of higher costs, higher price and lower recognition in the market. At this time, the government should play its guiding role in the choice of technical route and the innovation of the commercial mode.

B. *Lack of the Encouragement to the Skilled Personnel Causes Insufficiency of the Industrial Core Technology*

The innovative outcomes of the skilled personnel decide the holding degree of the core technology. But currently in the strategic emerging industry in Hubei, the core technology lacks a long-term accumulation and a forward planning, which leads to an insufficiency of training and encouragement of the skilled personnel in the fields of R&D of the frontier products.

C. *Peripheral of the Scientific and Technological Financial Mechanism*

At the moment, the innovation and development in the scientific and technological finance in Hubei lags behind the demands of the industrial development, such as weak in the financial aggregation and radiation, insufficient in the

enterprise group advantage and in the supply of the financial support policy. Finance should be emphasized in the regional economic development, for funds are the key factors in the transformation of the scientific and technological outcomes. So, an improved financial mechanism ought to be set up as soon as possible.

V. SUGGESTIONS TO FURTHER DEVELOP THE STRATEGIC EMERGING INDUSTRY

A. *Stimulating the Market Demand and Improving the Industrial System by Implementing Important Example Projects*

The pull of the valid market demand is crucial to developing the strategic emerging industry. Currently, the expansion of the market encounters some difficulties in the relative products and service like electric-driven cars and cloud-computing service, and the cost of the new energies, etc. Besides, the construction and improvement of the proper infrastructure and service system is also a long-term and hard process. Therefore, to stimulate the market demand effectively at home needs to be done in the region with fond foundations as an example. Then combined with the thorough industrial system, the industrial mode and new-typed commercial pattern will be explored and generalized by the consumption-driven countermeasures. At the same time, as parts of the industrial system, impeccable industrial technological norm systems and access- into- market institutions ought to be established [15].

B. *Based on the Industrial Chain, Breaking Through the Core Technology and Construct the Perfect Technological System*

The strategic emerging industry is the outcome in integrating the new technology and the emerging industry. The new technology includes both the core technology and the assistant technology like those in constructing infrastructure, in the testing service, etc. The emerging industry consists of information, recyclable energy and biology, etc. Based on these new technologies, by way of the technological breakthrough of trans-discipline and trans-field, these emerging industries will be made into the industrial chain with international competitiveness.

C. *Diversifying the Investor and Improving the Financial System in Science and Technology Gradually*

The strategic emerging industry can bring both massive profits and high risks to the investors. So, diversified investors like governments, enterprises, risk investment firms and insurance company, etc. may be encouraged to join in the investment and the risk-sharing mechanism. In this way, the social resources can be guided to gather in the frontier industrial technology and the financial system in science and technology can be further improved.

VI. CONCLUSION

Considering the needs of the 3rd industrial revolution, it is necessary to further develop the strategic emerging industries in the following aspects: piloted by the hi-tech industry, foster a new market demand around which a relatively industrial chain with international competitiveness

will be built. Also, increase the input into the science and technology by diversifying the investors and further improving the financial system so as to set up a risk-sharing mechanism.

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REFERENCES

- [1] Paul Markillie (U.K.). The third industrial revolution. *The Economist*, June, 2012.
- [2] Jeremy Rifkin (USA), translated by Tiwei Zhang, Yuning Sun. The third industrial revolution — How New Economic Mode changes the World. Zhongxin Press, June 2012.
- [3] Zheng Xu. The third industrial revolution-the Chance for China is Coming, *Business Review*, www.china-nengyuan.com/news/38250.html.
- [4] Zhaohui Li. 3D Printers Lead the third industrial revolution. *China Trade Relief*, 2012, No.11, page 8.
- [5] Huaiqiao Ying. Cloud Wisdom Times Expectation: from the Software Making Instruments to the Software Making All, *Electronic Measuring Technology Abroad*, 2013, No.1.
- [6] Ying Wang, Jianguo Xia. The third industrial revolution and Technology-Innovation Skilled Personnel Training, *China Higher Education*, 2013, No.1, Page 24-26.
- [7] Qunhui Huang, Jun He. The third industrial revolution and the Strategic Adjustment of the Economic Development in China: in the Angle of Transforming the Technological Economy Mode, *China Industrial Economy*, 2013, No.1, Page5-18.
- [8] Qunhui Huang, Jun He. The third industrial revolution and Adjustment of the Economic Development Strategy in China: Perspective of Transforming the Technological Economic Model. *China Industrial Economy*, No.1, 2013, pp5-18.
- [9] Yongchun Ao, Xiazai Jin. Study on the Selecting Base and Method of the Regional Strategical Emerging Industry. *Scientific and Technological Management Research*, No.17, 2012, pp121-124.
- [10] <http://bbs.pinggu.org/forum.php?mod=viewthread&tid=2248924&page=1>
- [11] <http://bbs.pinggu.org/forum.php?mod=viewthread&tid=2248924&page=1>
- [12] Statistic Bulletin of Hubei Province, <http://www.stats-hb.gov.cn/upload/tjnj/nj2014/>
- [13] <http://www.hbstd.gov.cn/tzgg/tzgg/37673.htm>
- [14] Tao Jiang. Orientation of the Effective and Policy in Developing the Strategic Emerging Industry in Hubei: Perspective on Comparing Hunan, Hubei and Jiangxi Provinces. *Contemporary Economic Management*, No.6 (34), 2012.
- [15] Feng Liu, Zhe Li, Zhi Chen. Issues and Suggestions in Developing Strategic Emerging Industries in China. *Scientific Newspaper*, <http://ccn.mofcom.gov.cn/spbg/show.php?id=13577>