

Opportunities and Challenges for the Development of Chinese Intelligent Manufacturing Science and Technology Enterprises with "Anti-Globalization"

JINMING ZHANG^o, 유자양*

^o경기대학교,

*경기대학교

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JINMING ZHANG^o, ZIYANG LIU*

^oKyonggi University,

*Kyonggi University

● 요약 ●

Following the global financial crisis, the global value chain contracted, and characteristics of "reverse globalization" of the economy and trade gradually emerged. This is due to the term "reverse globalization" referring to a shift away from globalization. Within a short period of time, the phenomenon known as "reverse globalization" developed as an inescapable obstacle, coinciding with the development and dissemination of the COVID-19 virus. At some time in the distant future, the "reverse globalization" of economic trade and the "globalization" of the digital economy will co-dominate the shifting trend of the global economic landscape. This will happen gradually over time. The goal of this research is to look at the minor changes that happened in the methods and techniques used by the economic mechanism known as "globalization against the flow." It employs Chinese smart manufacturing companies as a model and proposes a digital drive model to investigate the prospects and constraints of smart manufacturing technology enterprise innovation development under "reverse globalization," with the goal of establishing a digital innovation development path. The theoretical insights given in this study have the potential to serve as a reference for China as it attempts to build a new growth pattern based on a double-cycle and promote a new type of globalization.

키워드: reverse-globalization, smart manufacturing, technology companies, digitalization, opportunities and challenges

Looking back over the last four decades, globalization has clearly been a driving factor behind China's reform and opening up to long-term economic and political progress. Globalization refers to the process of disseminating the benefits of the industrial revolution throughout the world. Globalization's development mechanism is the market economy. And the amount to which globalization helps humanity is determined by the shape of the

global governance system and the efficiency with which it operates. China, Japan, Korea, India, Malaysia, and Europe and America in Asia are currently the key beneficiaries of globalization. Some nations with less developed economies gain from participation in the globalization movement as well. Globalization has provided fresh prospects for growth for all countries throughout the world. "Reverse globalization" is a type

of globalization. It seeks to create a win-win situation for globalization players by constantly lowering the cost of globalization governance and establishing a new globalization order. The terms "reverse globalization" and "anti-globalization" are not interchangeable. "Reverse globalization" refers to the process of retracing globalization in attempt to enhance world order. It may be viewed as an act of modifying the global industrial cooperative economy by accumulating forces, redesigning the global production structure, and adjusting the method of labor division.

Every year, the manufacturing industry in China employs more than 99 million people. It has a positive influence on the expansion of the national economy and the preservation of steady employment, in addition to playing an essential part in the overall economics of the country. However, China's traditional manufacturing sector has been plagued by challenges such as an unequal industrial structure, a large number of enterprises but just a few well-known ones, and a lack of essential technology. These problems have caused the sector to suffer. To put it another way, it is an example of "big but not strong" in the market. At the same time, China's manufacturing industry is under attack from both the migration of low-end industries to Southeast Asian nations and the return of high-end manufacturing to developed countries. Both of these developments are weighing heavily on the Chinese economy. Given the above, the most serious task today confronting China's manufacturing industry is determining how to raise the standard of Chinese output in order to expedite the country's march toward becoming a global manufacturing powerhouse. The use of information technology to promote change in manufacturing R&D, production, management, and other aspects of intelligent manufacturing appears to be a new breakthrough point for solving the current problem, so the digital transformation of manufacturing enterprises has become a hot topic for discussion in the traditional manufacturing industry.

The international financial crisis has had an influence on developed nations, and the impact cycle is protracted. It has, to some extent, been changed into a desire for locally produced goods, and the share of locally substituted end products has grown. The "One Belt and One Road" initiative was started by the Chinese government, and it represents a new development opportunity for the countries that are located along the route. It is also an attempt at a disguised globalization process, as well as a new exploration for those countries to achieve a synergistic development of advantageous industrial layout. Internally, China, as the world's factory, generates economic growth, employment, and service bottom consumption. Externally, China exports personnel, raw resources, industrial

intermediate products, and other items to suit the consumption needs of other nations. Along with the trend of "reverse globalization" and the process of new industrial revolution, the intelligent manufacturing technology enterprises of China will usher in a golden period of development for a long period of time in the future.

China's intelligent manufacturing, which has undergone a metamorphosis from equipment intelligence to manufacturing process intelligence. The characteristics of perception, analysis, reasoning, decision-making, and control that are attached to the original equipment are more reflective of equipment intelligence. Additionally, the equipment collects data on its own to achieve digital optimization decisions and improve production efficiency. The intelligence of the process realizes the connectivity of each intelligent piece of manufacturing equipment, and it accomplishes process optimization through simulation and program comparison in order to further decrease the length of the production cycle and enhance production efficiency. The production process, and maybe even the entire industrial environment, are both candidates for reform under the long-term aegis of smart manufacturing. As a result, the future development trend will consist of moving away from the singular usage of intelligent manufacturing equipment and toward the intelligence of the entire production process. The current post-epidemic era and tendency of "reverse globalization" present potential for China's smart manufacturing type technology enterprises, but they also need them to address several problems. The difficulties that the industry of intelligent manufacturing needs to address and find solutions for range from those that are related to the external environment of the industry to those that are related to the industry's internal structural flaws.

The so-called "reverse globalization" phenomenon is becoming more noticeable as a result of the ongoing pandemic. Ongoing global and local disputes, together with a plethora of unexpected occurrences, will dominate the international political economy in the year 2022. Although the road to digitalization and zero-carbon industrial development is still full of difficulties, and the world political and economic landscape is full of variables and uncertainties, the theme of the world today is still world peace and development. Fortunately, it has been the case along with the development of the new industrial revolution and the rapid rise of the digital economy. As a result, the global economy will eventually emerge from its winter doldrums and usher in spring. In this context, Chinese intelligent manufacturing type technology enterprises should continue to improve the road of digital transformation and innovation integration development, continuously deepen self-learning, use new technologies to transform and upgrade industrial production processes, and work

toward realizing digital and intelligent zero carbon development.

We use the ideas of digitalization, zero carbon, and wisdom in the framework of "reverse globalization" to analyze the prospects and constraints of innovation and development of smart manufacturing technology firms. It is then utilized to determine a digital+zero carbon roadmap for smart innovation development. This paper's theoretical findings may be used to help China construct a new double-cycle growth pattern and promote a new form of globalization.

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