

Research on the Construction of Enterprise Key Abilities under the Background of Integration of Manufacturing Industry and Internet

Yuting Zhao^{1,a}

¹School of Economics and Management, Harbin University, Harbin, 150086, China

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Abstract. At present, a new round of scientific and technological revolution is booming, and the integration of manufacturing and the internet has become an irreversible trend. The smooth integration development of the manufacturing industry and the internet depends on the construction of the key capabilities of the enterprises. This paper analyzes the construction model of three key capabilities needed in the integration process of the manufacturing industry and the internet, including the ability of basic technologies, the ability of system solutions and the ability of safety guarantee, and gives the methods to co-ordinate the three key capabilities to provide some references for the relevant researchers.

Introduction

The manufacturing industry is the root of a country's national economy and the driving force of social development. It has promoted progress and innovation in all walks of life. "Internet plus" represents a new economic form, which gives full play to the internet in the optimization of the allocation of production factors in the role of innovation and integration, the application of the integration of the internet in various fields of economic society. With the rapid development of the internet, it gradually comes to the manufacturing industry and all aspects of the whole process of product production cycle. Using the internet platform, interaction degree and range of manufacturing enterprises, the market and users greatly expanded, new models, new form of the combination of the internet and the manufacturing layer is not poor, which is reshaping the industry organization and manufacturing mode. The reconstruction of the enterprise and the customer relationship. At present, the research and application of the internet in the manufacturing industry in developed countries is developing very fast, and the new system and pattern of industrial division of labor in the world are taking shape. Therefore, to further clarify the path and the role internet plus manufacturing industry, think our country from manufacturing power to create powerful change ideas. Manufacturing industry in the internet convergence development background, not only need platform construction, ecological construction, more need is the key ability construction of enterprise. The development of manufacturing industry is actually a continuous technological progress in the process of getting technical capabilities and will process it into product and process innovation, technological innovation has become the main decision of advanced manufacturing industry competitiveness factor. Technological capability is the process of accumulation and promotion of technological innovation. In the fierce market competition, technological innovation is a key factor for enterprises to gain competitive advantage. From the law of the development of the internet, the internet is from the consumer to the manufacturing sector of the proliferation. In the consumption link, more is a kind of value transmission, and the manufacturing link is a kind of value creation. At the core of the consumer chain is how to improve the efficiency of the transaction, and the core of the manufacturing process is how to improve production efficiency. In the consumption link, the leading enterprise is the internet enterprise, and in the manufacturing link, the leading enterprise is the manufacturing enterprise. Technological innovation promotes the technological capability of enterprises, promotes the overall technical level of the industry, produces high value-added products and obtains competitive advantages. When the enterprise has the certain key abilities, the enterprise can

undertake the important task of the integration of manufacturing and internet. Otherwise, when the enterprise key ability is scarce, it is difficulty for the enterprise to reform and upgrade.

Necessity of the Construction of Enterprise Key Abilities in the New Era

The solution of the development of intelligent manufacturing system is to satisfy the requirements of informationization of manufacturing industry. As the core of the intelligent manufacturing system to build the industry, it realizes the mutual recognition and real-time interaction of people, equipment, products, services and manufacturing elements and resources. The characteristics of integration of user functions, product form and the supply model rely on the hardware and software products and systems provide flexible and customized services. Intelligent manufacturing essence is the manufacturing industry from the resource driven transformation to the information enterprises, factories, workshop equipment, and Internet Interconnection, manufacturing production and green services, promote the integration of the physical world and information world. Considering the manufacturing industry, the sustainable development of environment and resources, green manufacturing and the Internet as the tool, the channel service manufacturing industry is the focus and direction of the manufacturing mode in the Internet era. The construction of industrial information security system is an important component of the key information infrastructure protection in China, and the cornerstone of the healthy and orderly development of the manufacturing industry. Establish information security, functional safety, essential safety and public safety industrial information system safety standard system, carry out standard verification work, support industry development from management, technology, application and so on. Carry out information security inspection and risk assessment of industrial control systems in key areas, develop information security testing tools, realize on-site testing and evaluation capabilities, and support the safety protection work of industrial systems in china. Support industrial control system, information security, core technology and product R & D and industrialization, support the development of domestic technology and products, and fundamentally solve the safety and reliability of industrial systems. The construction industry information system security laboratory, support the establishment of energy, electric power, petrochemical, rail transportation and other fields of information security simulation test platform and the detection of early warning platform, to carry out the monitoring of industrial system of online risk perception, exposure to industrial hardware and software on the Internet, the establishment of large data risk correlation analysis found that the Internet platform hardware security the risk in a timely manner. The ability of early warning and emergency disposal provides technical support for the national industrial system of network security.

Construction Models of Enterprise Key Abilities under the Background of Integration of Manufacturing Industry and Internet

Construction of the Ability of Basic Technologies.To speed up the key technology, automatic control and sensing core industrial hardware, industrial internet, cloud service platform and intelligent manufacturing infrastructure based on technology integration and development in the manufacturing industry. Specifically, encourage the cloud project of the small and medium enterprises. Increase the information technology investment in the service platform construction. We should actively build an industry oriented information technology service platform. On the one hand, the information technology service department of the leading enterprises should be encouraged to provide professional information and technical support for the upstream and downstream partners in the supply chain, and to raise the level of supply chain informatization. On the other hand, it supports the development of the specialized information technology service platform, promotes the public service model, and provides the public information technology resources service for the enterprises in the region. For example, to improve the coverage rate of collaborative manufacturing technology service platform, for the above scale enterprises to provide product collaborative design, manufacturing, production tasks, remote monitoring, technical exchanges and application training services. Encourage enterprises to increase investment in information technology. Encouraging

enterprises, especially large enterprises, to increase the material and human resources of information technology. Increase investment in information equipment, such as the purchase or upgrading of core hardware and software, industrial internet, cloud computing and large data analysis platform and other technologies. We need to speed up the construction of enterprise informatization personnel, such as the establishment of the chief information officer position, responsible for the management and training of enterprise information technology personnel. Support small and medium enterprises to participate in enterprises cloud project. We encourage small and medium-sized enterprises to strengthen industrial chain cooperation and ecological system construction, and share the cloud service platform.

Construction of the Ability of System Solutions.The capability of system solution is based on the development of digitalization, networking and intelligence of manufacturing industry. It relies on the integration, flexibility and customization of hardware and software products. The ability to strengthen the system solution needs to be expanded from two aspects, namely supplier cultivation and enterprise pilot demonstration. Focus on key industries and develop systems solutions vendors. We will speed up the development of a number of industry - specific system solutions vendors. Encourage enterprises to rely on their own intelligent advantages, to the customer's automation, information technology, digital construction field extended business, from parts suppliers to systems integrators change. Support qualified large-scale manufacturing enterprises to carry out system solutions business stripping reorganization, transformation solution provider for market oriented intelligent manufacturing system from internal departments to promote the system solution service specialization, scale and market. System solutions providers are encouraged to provide specialized system solutions in line with the specific circumstances of their customers, especially small and medium-sized customers. We should crack the current predicament of the domestic manufacturing industry. Developed countries to promote the re industrialization strategy lead to the return of high-end manufacturing, as well as developing countries to accelerate the industrialization process in the low-end manufacturing shunt. China's manufacturing industry is facing increasingly heavy pressure, to develop practical solutions for intelligent and high feasibility, highlighting the significance of the demonstration effect of manufacturing system, the core competitiveness of remodeling industry. At present, some sectors of China have such trends. The leading enterprises should further play an exemplary role to organize the industrial system solutions pilot demonstration. Select a number of intelligent manufacturing in the leading exemplary role of the industry system solutions pilot enterprises, organizations to carry out experience exchange. The model value of the demonstration enterprise shall be thoroughly excavated. The integration of management and control, production and supply and marketing and finance and business integration will be organized and implemented.

Construction of the Ability of Safety Guarantee.The construction of industrial information security system is an important component of the key information infrastructure protection in China, and the cornerstone of the integration of manufacturing and the internet. To foster security capability, it is necessary to support the core technology, strengthen the industry standard management and foster the awareness of information security. We should support information security, core technology and products. The development of domestic information security core technology and products can fundamentally solve the industrial system potential security threats. To establish the energy, electricity, petrochemical, rail transportation and other fields of information security simulation testing platform and detection and early warning platform. Establish a large data risk related analysis platform, timely discovery of the Internet industrial control software and hardware security risks, enterprises and industry risk situation visualization, perception, early warning and emergency response. Era of big data, network data security issues, especially personal information security issues become increasingly prominent. In the process of developing and utilizing large data, lack of awareness of enterprise network data protection, leakage, abuse, sale of personal information and other illegal phenomena are prominent, and data security management and technical measures need to be improved. Increase the management of network information security services industry. The government should register and record the network information security service industry, so as to

promote its standardization development. Relying on the national information security special, to carry out network safety technology pilot demonstration, inspection technology and advanced and application effect. Organization of information security services enterprises to work experience exchange, and promote cooperation between service agencies, and jointly enhance service capacity. Strengthen enterprise information security awareness. Continue to organize the safety training class business information network and industrial control system, and the key areas of industrial control system information security research classes, professional training of information security services and related key enterprise personnel, to further strengthen the construction of network information security professionals.

Necessity of the Construction of Enterprise Key Abilities in the New Era

The basic technologies ability, the system solutions ability and the security guarantee ability are complementary and mutually beneficial to the development of the manufacturing industry and the internet. The basic technologies enhance the enterprise support system solutions and security; the system solutions can help enterprises to further optimize basic technology and the improvement of network security system; the security guarantee ability provides the protection and security for the development of basic technology and system solutions. The basic technology capability is the prerequisite for the integration of manufacturing and the internet. The construction of basic technological capabilities is the first step in the integration of manufacturing and the Internet, laying a solid foundation for the integration of manufacturing and the internet. The system solution capability is the core of the integration of manufacturing and internet. The improvement of system solution capability can solve the practical problems encountered by the manufacturing enterprises in the process of integration with the internet. It is the core element of the integration of the manufacturing industry and the internet. The security guarantee capability is the guarantee of the integration of manufacturing and the internet. The protection of information security can make manufacturing enterprises feel at ease to implement the integration development of the internet and the enterprise, without considering the additional uncertainties to deepen the degree of the integration of manufacturing and the internet. The relationships among the three key abilities and the integration of manufacturing and the internet are shown in Figure 1.

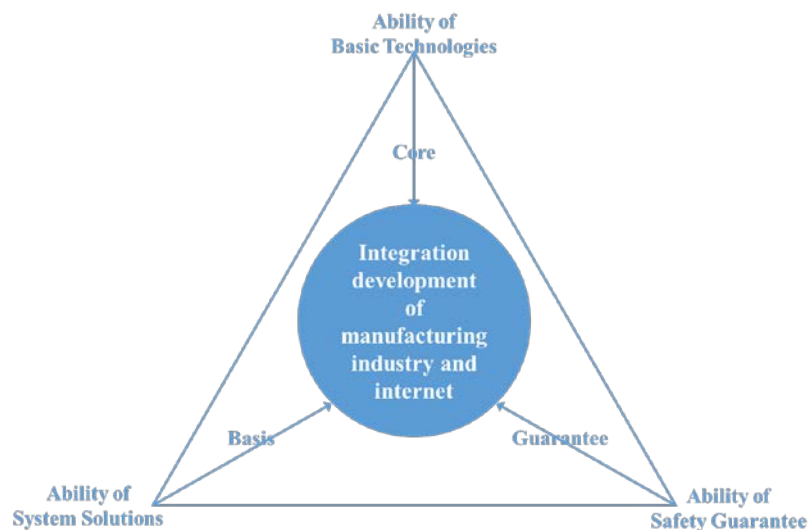


Figure 1. Relationships among the three key technologies

Conclusion

The integration development of the manufacturing industry and the internet is the development trend of China's manufacturing enterprises. In the internet era, manufacturing enterprises should have the key capabilities, such as the ability of system solutions, the ability of basic technologies and the ability of safety guarantee. Only in this way can we seize the historical opportunity of the integration of the manufacturing industry and the internet.

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