

2014

BioTechnology

An Indian Journal

FULL PAPER

BTAIJ, 10(18), 2014 [10537-10542]

The study on modes and strategies of equipment manufacturing industry servitization transformation driven by innovation

Xin Wen^{1,*}, Mengyao Cheng², Yumei Liu³¹School of Management, Shenyang University of Technology, Shenyang110870, Liaoning, (CHINA)²School of Management, Shenyang University of Technology, Shenyang110870, Liaoning, (CHINA)³School of Social Science, Liao Ning Police and Justice Management College, Shenyang110161, Liaoning, (CHINA)

E-mail : wenxin9901@126.com

ABSTRACT

There have been a lot of demands for modern equipment manufacturing industry's customers to provide high quality service. Providing high quality service is an important trend of the equipment manufacturing industry with connotative development driven by innovation. Therefore, the equipment manufacturing industry servitization transformation driven by innovation is an important subject for theoretical research and practical exploration. Based on the unique characteristics of the equipment manufacturing industry, this paper studies on connotation, characteristics and mode of the equipment manufacturing industry servitization transformation, provides targeted strategy in view of the equipment manufacturing industry enterprises, relevant industry associations and relevant government departments and offers references to the equipment manufacturing industry servitization transformation.

KEYWORDS

Equipment manufacturing industry; Servitization transformation; Driven by innovation; Mode; Strategy.



INTRUCTION

With the rapid development of the global economy and the advent of IT revolution era, the equipment manufacturing enterprises in many countries have realized that the profits are gradually declining if only depending on manufacturing. Under this embarrassing situation, the equipment manufacturing enterprises enhance their products' core competitiveness by providing better service than before. Currently equipment manufacturing services transformation has become an inevitable tendency of the development of equipment manufacturing industry. The Party's 18th Report clearly stated that it was supposed to promote strategic emerging industries and advanced manufacturing to develop healthily, to facilitate modern service industry to grow and to accelerate the traditional industries to transform and upgrade^[1]. Therefore, the equipment manufacturing industry servitization transformation driven by innovation is an inherent demand for the development of Chinese equipment manufacturing industry.

According to the relevant researches, based on the characteristics of the equipment manufacturing industry, it studies the meaning, feature and modes of the equipment manufacturing industry servitization transformation. Meanwhile, it proposes targeted strategy to the equipment manufacturing enterprises, industry associations and relevant government departments, which provides reference to equipment manufacturing industry servitization transformation.

CONNOTATION AND INFLUENCING FACTORS OF THE EQUIPMENT MANUFACTURING INDUSTRY SERVITIZATION TRANSFORMATION

Connotation of the equipment manufacturing industry servitization transformation

Recently manufacturing industry servitization transformation is a significant theme in the study of management science. In this part, it will review the relevant researches and analyze its connotation through definition.

The earliest two persons who propose servitization are Vandermerve and Rada^[2]. They believe that the equipment manufacturing enterprises provide goods and service initially and then turn into offering complete goods or service package. In terms of complete package includes goods, service, supporting, self-service and knowledge. White (1999) describes that the equipment manufacturing industry servitization transformation changed products producers into service providers, which is a dynamic process^[3]. Fishbein (2000) and Makower (2001) believe that servitization transformation sells products with offering perfect service, which emphasizes providing service rather than selling products^[4]. Aiming at equipment manufacturing industry servitization, Szalavetz (2003) believes that it includes two aspects: the efficiency of internal services and quality of external services^[5]. To be specific, internal service contains not only exploration of products and process, design, expanding training, pre-job training and value chain management, but also exploration of organization, coordination, human resource management, accounting, law and fanatical service, which influence the efficiency of enterprises' internal operation and competitiveness of enterprises. In addition, external service contains not only maintain and repair, but also purchasing, financing, transportation, installment, system integration and techniques supporting, which increase the value and sales with intangible service.

Jiguo Liu and Li Jiangfan Li^[6,7] maintain that manufacturing enterprises servitization refers a dynamic process that manufacturing enterprises transform concentrating on products producing to service providing. Servitization contains two aspects. One is input service, which means service elements are in the total investment in the manufacturing industry sector. The other is output service, which means service is in the total output. Therefore, new development form of equipment manufacturing industry makes an apparent contrast with the traditional one, which can be seen in the following parts.

TABLE 1 : Comparison between traditional equipment manufacturing industry mode and new one with servitisation transforming

asdec tvd	Value Increase	Process Flow	Services Modes	Functions of the Organization
Traditional equipment manufacturing industry mode	By selling tangible products to achieve value increase	Enterprises only produce products	Enterprises passively provide customers personalized service	Enterprises transmit internal information only on horizontal or vertical level
The mode of the equipment manufacturing industry servitisation transforming	Enterprises provide the tangible products as well as services to make profits	Enterprises produce products and also focus on corporate internal services and external service	Enterprises initiatively provide customers personalized service	Enterprises transmit internal information through network-style sharing

To sum up, equipment manufacturing industry servitization means the process that equipment manufacturing enterprises transfer the concentration from products producing to service providing. Equipment manufacturing servitization can be divided into two parts. One part is equipment manufacturing industry input servitization, which implies the process of products producing demands a wide range of services, including new techniques exploration, market research, advertisement,

logistics, techniques supporting, parts supporting and information consultancy. The other one is equipment manufacturing industry output servitization, including after-sale service, maintain, financial lease and insurance. The targets of servitization are to increase customer value, to satisfy customers demand as much as possible and to enhance the competitiveness of enterprises.

The factors of equipment manufacturing industry servitization transformation

With the advent of global economic integration, equipment manufacturing enterprises goes through gradually increasing competitive pressure. However, under the fierce competitive circumstance throughout the world, our equipment manufacturing enterprises could hardly survive not mention to make profits. Hence, it puts forward the new demand of development mode to equipment manufacturing enterprises. In China, even though equipment manufacturing industry servitization is not mature enough and still needs more exploration, it has become an inevitable tendency. Factors that affect the equipment manufacturing industry servitization transformation are both internal and external.

Internal factors

Technical factors

Modern equipment manufacturing enterprises integrate producing and service providing and they two turn increasingly close. The equipment manufacturing enterprises from products research and development, design, final sale to after-sale process are accompanied by a large number of services. Meanwhile, enterprise internal information transmission is from original one-way type to current network structures. For this kind of products, equipment manufacturing enterprises need to provide supporting operation instruction and after-sale tracking service to customers. And equipment manufacturing enterprises are gradually changed into equipment manufacturing industry servitisation enterprises.

Human resource factors

According to the development of equipment manufacturing enterprises, in order to meet the needs of the consumers much better, equipment manufacturing enterprises need to carry out the training to relevant personnel, and this kind of training is a kind of internal service. High performance, strong technical supporting and satisfactory are beneficial to create value for customers and create profits for enterprises in turn.

External factors

Changing the way of sales

With the rapid development of equipment manufacturing industry, most of enterprises change the way from a seller's market in the past to a buyer's market at present. During the manufacturing enterprises internal producing, they need to input a large amount of elements, such as products research and development, design, etc. Meanwhile they provide transportation, installation, maintenance and other services. Changing the way of sales are the external factors influencing the equipment manufacturing industry servitization transformation.

Environmental factors

With the cost of raw material and human resource gradually rising through the world, manufacturing enterprises are confronted with the less and less profits, leading to traditional manufacturing enterprises hardly survive. Compared with the service industry, the traditional equipment manufacturing industry has great demand for resources, human resource, which goes against the global environmental protection consciousness. Therefore, it is essential to put service into in the equipment manufacturing industry around the world.

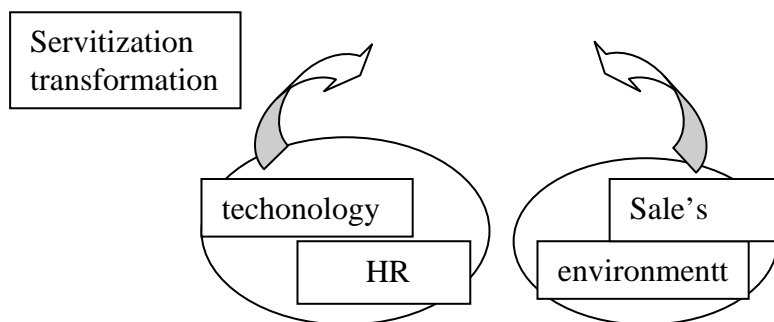


Figure 1 : Mode of independent development with autonomic innovation

THE MODED OF THE EQUIPMENT MANUFACTURING INDUSTRY SERVITIZATION TRANSFORMATION DRIVEN BY INNOCATION

In the competitive market, servitization transformation is an integral part of the equipment manufacturing industry. Enterprises should pay attention to the servitization transformation to achieve the balance between tangible products and

intangible service. Therefore, it is an indispensable part for the mode of the equipment manufacturing industry servitization transformation driven by innovation to realize servitization transformation.

Independent development with autonomic innovation

The mode of independent development with autonomic innovation means through the enterprise internal autonomic innovation, with the instruction of equipment manufacturing industry enterprises, the internal research and development team explore the mode of equipment manufacturing industry servitization transformation. In this case, it saves a great deal of cost and increase the innovative efficiency. In addition, it promotes the integration between equipment manufacturing industry and service industry. However, this kind of innovation mode demands relatively higher research and development capability and invests capital. Thus, manufacturing enterprises should complete the corresponding targets according to their own case.

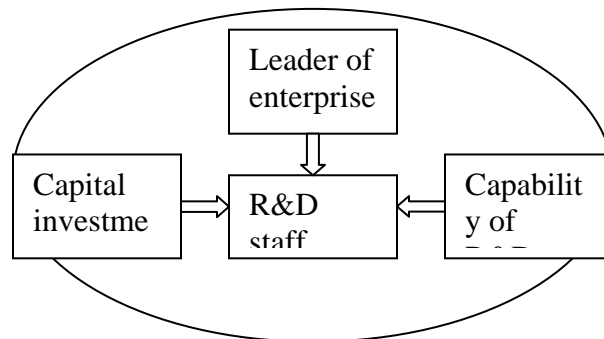


Figure 2 : Mode of independent development with autonomic innovation

Joint development with cooperation innovation

The mode of joint development with cooperation innovation means enterprise explores equipment manufacturing industry servitization transformation with external research and development organization and universities cooperation. Meanwhile, this mode is beneficial for enterprises to import a great quantity of specialized talents. In this way, equipment manufacturing enterprises focus on internal core products production and corresponding services providing. What’s more, they cooperate with other research organizations to offer the scientific research achievements to assist the equipment manufacturing industry servitisation transformation.

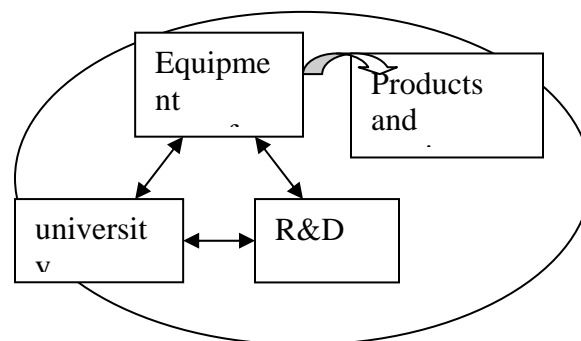


Figure 3 : Mode of joint development with cooperation innovation

Imitation with introduction of innovation

In recent years, with the support of national policy, our equipment manufacturing industry develops rapidly, but there is still a certain gap compared with western developed countries on the overall level. In the technical field, our enterprises cooperate with several research institutions to make a breakthrough in some areas. But it still lacks capability of innovation. Therefore, we need to put forward the mode of imitation with introduction of innovation. In this mode, enterprises gradually form their autonomic innovation by learning western advanced technology and different research organization cooperation. Eventually it realizes the appropriate mode of equipment manufacturing industry servitisation transformation and upgrade.

Integrated mode

Integrated mode is based on the upper three modes combination with fostering strengths, circumventing weaknesses and playing their respective advantages, which can not only increase innovation efficiency and avoid the leakage of internal

information, but also save costs. In the way, enterprises emphasize their core products and make cooperation with corresponding research organizations. Moreover, the whole industry learns the western advanced thoughts and ideas rather than blindly imitate. On the basis of introduction and absorption of innovation, the industry finds out the mode to form manufacturing industry servitization transformation.

STRATEGIES OF THE EQUIPMENT MANUFACTURING INDUSTRY SERVICIZATION TRANSFORMATION DRIVEN BY INNOVATION

With the development of equipment manufacturing industry throughout China, our country's economy has an increasingly upwards. The development of equipment manufacturing industry is not unilateral. To be specific, it tends to depend on instruction of government policy, support of industry associations and their technology, management ability and service ability to improve the all-around innovation capability. So in terms of the government, industry associations and the equipment manufacturing industry enterprise, several strategies are put forward to realize equipment manufacturing industry servitization transformation in the following.

Confronted with opportunities and challenges, it is supposed to reinforce the government leading function, accelerate and promote equipment manufacturing industry servitization transformation

As the leader of market economy regulation, government must play a positive role in promoting equipment manufacturing industry servitization transformation. It is supposed to establish corresponding strategies to facilitate equipment manufacturing industry servitization transformation and encourage the development of equipment manufacturing industry servitization transformation. In China, enterprise should make full use of our country's economy, science and technology, and policy resources to promote the interests related to all parties and to break through all the obstacles in the process of servitization transformation. They need to utilize the constraint of laws and regulations to reduce damage to the resources and the environment.

Industry associations should provide the platform to support the equipment manufacturing industry servitization transformation and ensure it to healthily develop

Equipment manufacturing industry association is a link between the government and the equipment manufacturing industry enterprises. Industry association ought to form the unified consciousness to promote servitization transformation in equipment manufacturing industry. Meanwhile, industry associations complete the information release platform to provide the latest information to enterprises, techniques support and combination and communication of industry, universities and research institutions. What's more, they need to vigorously introduce professional talents to provide human resource to support and boost the equipment manufacturing industry servitization transformation.

Equipment manufacturing enterprises make efforts to achieve the equipment manufacturing industry servitization transformation

As the principal part of implementation of the equipment manufacturing industry servitization transformation, enterprises are supposed to encourage the internal implementation of personalized products design, after-sales service and products recovery, a series of services. They need to change their focus from tangible products to combination of tangible and intangible products. Only in this way can enterprises increase the products profits and form the core competitiveness.

CONCLUSIONS

In conclusion, it is imperative to implement the equipment manufacturing industry servitization transformation. Compared with the developed countries around the world, our country is still in the stage of industrial development, and it needs to rely on manufacturing to accelerate national economic growth. And service part accounting for the low proportion means the low enterprises competitive ability and profits. Hence, it is essential to offer high quality service to customers. And it is tendency of connotative development of the modern equipment manufacturing industry driven by innovation. In the view of our the modern equipment manufacturing industry servitization level, enterprises should take their unique advantages, increase the proportion of service in final products, try their best to meet the demands of consumers and form the enterprise core competitiveness.

ACKNOLODAGEMENT

This paper is supported by National Science Foundation of China (71402104), Science Foundation of Ministry of Education of China (10YJC630272), the New Teachers' Fund for Doctor Stations, Ministry of Education (20122102120007).

REFERENCES

- [1] Jintao Hu; The report in the eighteenth congress of the communist party of China. Beijing: the Party's Publishing Press, (2012).

- [2] S.Vandermerve, J.Rada; Servitization of business: adding value by adding services. *European Management Journal*, **6(4)**, 314-324 (1998).
- [3] A.L.White, M.Stoughton, L.Feng; *Servicizing: the quiet transition to extended productresponsibility*. Boston: Tellus Institute, (1999).
- [4] B.Fishbein, L.S.McGarry, P.S.Dillon; *Leasing: a step toward producer responsibility*. New York: Inform Press, **5(2)**, 90-93 (2000).
- [5] A.Szalavetz; *Sertiarization of manufacturing industry in the new economy: experiences in Hungarian companies*. Hungary: Hungarian Academy of Sciences, **134**, (2003).
- [6] Jiguo Liu; *The research on tendency of manufacturing industry servitization*. Beijing: Economic Science Press, **3**, (2008) .
- [7] Jiguo Liu, Jiangfan Li; *Review of foreign manufacturing industry servitization studies*. *Beijing Economist*, **4(4)**, (2007).