On the Influence of Platform Economy on Transformation and Upgrading of Chinese Traditional Manufacturing Industry
- A Case Study of Red Collar Group

Hanyu Song¹  Mengyun Liu²
⁠¹China University of Petroleum. School of Economics and Management. Economics 266580
⁠²China University of Petroleum. School of Economics and Management. Marketing 266580

Abstract: The profitability of the traditional manufacturing industry is sluggish and fails to well adapt to the current trend of economic globalization. In the context of industry 4.0, it is imperative for the traditional manufacturing industry to transform and upgrade in an all-round way in the market-oriented and government-led environment. At this time, platform economy furnishes a good impetus for the transformation and upgrading of traditional manufacturing industry. Traditional manufacturing industry adapts to the needs of the external market environment through platform structure, adjusts factor input premised on dynamic changes in factor endowment, integrates scientific and technological revolution, and gradually cultivates competitiveness through continuous technological innovation, thereby achieving the transformation and upgrading of industry. In the background of conversion of era, this paper explores the innovation of traditional enterprises in the current historical background from the angle of evolution, attempting to reveal that platform economy helps traditional manufacturing enterprises to update their production methods, restructure their management structures and set up supply chain thinking, thereby pushing forward their transformation and upgrading. Taking the transformation and upgrading of Red Collar Group as an example, this paper analyzes the process of rapid learning, resource integration, innovation iteration, self-fission, and continuous evolution of the enterprise premised on platform economy, thereby proving the positive impetus of platform economy to the transformation of traditional manufacturing industry and testing its logical rationality. The research concludes that platform economy will become one of the significant strategic modes of transformation and upgrading of traditional manufacturing industry in China.

1. Introduction
China's traditional manufacturing industry makes up the highest proportion of national economy, creates the most tax revenue and offers the most jobs. Its main business income makes up approximately 88% of total revenue of China's industries (data source: China Statistical Yearbook 2017). However, since China's traditional manufacturing industry is at the low end of the global value chain, its extensive economic growth mode fails to well adapt to the new features and requirements of economic globalization and high technicalization. Resulting from the continuous increase of manufacturing costs and the decrease of consumption in the international market, the international competitive advantage of enterprises is declining, and China's domestic demand is insufficient,
resulting in that the traditional manufacturing industry is faced with difficulties. To better adapt to international competition, China's traditional manufacturing industry needs to extend from the manufacturing link at the low end of the value chain to the two ends of the "smile curve" (research and development and manufacturing servitization) to realize the strategic transformation of transformation and upgrading of traditional manufacturing industry.

In the context of deepening social division of labor, speeding up technological progress and intensifying market competition, manufacturing industry is confronted with transformation and upgrading mechanisms and paths different from those in the past. As an emerging economic theory, platform economy is rising in a rapid manner, which has played a huge role in advancing the transformation and upgrading of traditional manufacturing industry. Platform economy is a new form of industrial organization, and it is a new format aiming at improving efficiency and decreasing cost premised on digital technology, data drive and platform support and by means of business process change, industry chain consolidation and multi-business combination. At the theoretical level, in the past 30 years, the platform economy theory has been continuously developed, the connotation of platform economy has been continuously extended, and the platform economy thought has been continuously applied in the commercial and industrial fields. Especially in the new economic environment contributed by globalization, informatization and networking, it offers an opportunity to push forward the transformation of traditional manufacturing development strategy. In the meanwhile, platform economy is also of vital practical significance. Data show that all 15 major Internet companies on a global scale operate with the platform mode, and 60 of the world's largest 100 companies also derive their major income from platform mode. While in the 2016 list of domestic unicorn enterprises, 11 of the companies with the highest valuation among the top 15 have all been operated in the platform mode. To sum up, we have entered the era of platform economy. In the national strategic background of "Internet+", platform economy has already become a significant tool for China's economic transformation and a vital part of "mass entrepreneurship and innovation". Platform economic activities can realize the concentration of information and transactions, promote the integration of production factors, improve the efficiency of resource allocation, reconstruct the value chain of the original industry, accelerate the innovation of business models, and enable stakeholders to benefit from the platform.

Taking Red Collar Group as an example, it is the focus of this paper to study how the traditional manufacturing industry can realize transformation and upgrading with this platform economy. Based on the research in related fields at home and abroad and combined with the case analysis of Red Collar Group's development, this paper expounds the influence of platform economy on traditional manufacturing industry in three aspects: changing production concept, innovating business management mode and reshaping industrial supply chain. It clarifies the relationship between the construction of platform economy and the transformation and upgrading of traditional manufacturing industry under the new economic form.

2. Platform Economy has Triggered Changes in the Economic Operation Mechanism.

The booming development of platform practice calls for related theoretical research. Over the past ten years, the platform has become a topic of common concern in many fields such as economics, management, law, sociology and political science. McAfee and Brynjolfsson1 (2017) regard the rise of the platform as one of the three landmark events of the "digital revolution". It can be said that the development of the platform economy has profoundly changed the face of the global economy. Understanding the characteristics of the platform economy itself and how enterprises use the platform economy is crucial to the transformation and upgrading of traditional manufacturing industries.

First of all, the platform economy is provided with strong core resources and service capabilities, and can create an open and win-win business model/ecosystem (Parker & Van1, 2012, Ceccagnoli2, Parker G, Van A M, A digital postal platform: Definitions and a roadmap [R], America; The MIT Center of Digital
The emergence of the platform exerts an impact on the change of business model, information transmission and transaction mode: that is, the structure of transaction mode and marginal cost is changed into a charging mode. In the meanwhile, platform operators gather factor resources to the maximum extent and develop a new economic mode: a business mode that allows them to continuously add value while benefiting platform participants (Shi Jianyong, 2013). Thanks to the ever-accelerated development of business models, the integration elements of the platform have gradually developed into an ecosystem. Traditional industries rely on the ecosystem built by the platform, or rely on network platforms to build their own ecosystem, in a bid to achieve the purpose of industrial transformation and upgrading through the formation of ecosystems. The emergence of platform ecosystems has covered the original industrial pattern and blurred the industrial boundaries, because platform-based enterprises can continuously carry out cross-border operations premised on their core products or services and integrate various businesses to boost industrial transformation and upgrading.

Next, the platform is in possession of a modular division of labor mechanism, an open innovation mechanism, a competition mechanism, a trust mechanism and a network marketing mechanism, which can reshape the industrial chain and boost the transformation and upgrading of the traditional manufacturing industry as a whole. The platform economy reduces the cooperation cost of division of labor, enhances the technological capability of manufacturing enterprises and facilitates the upgrading of the technological process of manufacturing industry; the open innovation mechanism of the platform reduces the cost of product research and development, shortens the research and development cycle, improves the innovation capability of manufacturing industry, and facilitates product upgrading. Moreover, market competition on the platform forces manufacturing enterprises to innovate in research and development, providing development opportunities for small-scale enterprises with market segments and advancing the upgrading of industrial chain functions; the trust and cooperation mechanism of the platform strengthens the cooperation relationship between platform enterprises, reduces the cooperation cost, makes the platform network more extensible, and improves the outward association capability of the platform network (Peng Shiyan, 2017). The platform theory of the precise marketing mode based on the platform blurs the concepts of upstream and downstream suppliers and consumers (Ali Research, 2016). Yao Kai et al. (2009) expounded that in the network-like industrial chain, platform leaders have realized value creation coordination and standard upgrading among participating entities through a series of strategies.

After the research of various scholars and the analysis of individual enterprises, this paper holds that the impact of platform economy on the transformation and upgrading of traditional industries is principally reflected in three strategic ideas. The first strategic idea for the traditional manufacturing industry to participate in the construction of the platform mode to realize transformation and upgrading is to change the previous cost-leading production mode, abandon the concept of mass production and scale production, and develop personalized and modular flexible production mode by using the platform business mode. On this basis, Red Collar has basically addressed the issues of high inventory, high cost and insufficient innovation capability faced by the traditional manufacturing industry, offering a reference for the successful transformation of the traditional manufacturing industry. The second strategic idea is to change the previous hierarchy-driven management mode to a flat management mode driven by orders placed under the platform economy. The platform makes
information exchange and communication more effective, and the point-to-point communication hierarchy renders the production and sales of traditional manufacturing more efficient. The third strategic thinking is to play the role of supply chain in industrial transformation and upgrading by using information system and four-flow coordinated development premised on platform economy, supply chain thinking, and on the basis of platform economy, to become a value-added chain covering the whole product movement process, and to further build an open supply chain that is mutually beneficial and win-win with suppliers.

![Diagram of Platform Economy]

Source: Author drawing

Figure 1. The connecting function of platform economy

3. Impact of Platform Economy on Transformation and Upgrading of Traditional Manufacturing Industry

Qingdao Red Collar Group Co., Ltd. (hereinafter referred to as Red Collar) has successfully launched a personalized customization platform in the global Internet era, the Global Clothing Customization Supplier Platform with hundreds of millions of capital investment after over 10 years of verification. Red Collar has created a complete solution of full customization, full life cycle and full industrial chain customization of clothing, thoroughly subverting the traditional concept of "workshop tailor" and initially boasting a certain competitive advantage of "speed". After 11 years, Red Collar successfully shaped a new business model (C2M) and a new marketing model (F2C) for garment enterprises in virtue of platform economy and the concept of the Internet. It has built a direct interactive platform between consumers and manufacturers, eliminating the intermediate links. The whole process, by relying on data-driven and network operation, makes use of the lean management of platform economy to realize process and organization reengineering, fast learning, integration of resources, innovation iteration, self-fission, and continuous evolution.

3.1. Platform Economy Contributes to Flexible Production

From the point of view of product production, the platforms are classified into internal (company or product) platform and industrial (external) platform. Internal platform refers to a company's pooling of a series of assets to availably develop and produce a series of products. While making centralized utilization of resources and modular design and production, and enhancing the output efficiency, increase complementary and alternative products to meet the diversified needs of consumers.

Red Collar's Cotte Internet platform (inside) makes full use of information technology, centralizes resources, availably realizes direct interaction between consumers and manufacturers, eliminates information asymmetry and various agency costs resulting from intermediate links, carries out
industrial assembly line production of personalized products, and realizes personalized customization under large-scale production. Red Collar platform organically combines real economy with virtual economy and initially explores a new path for the transformation and upgrading of traditional manufacturing industry.

(1) LP production mode: Red Collar has fully mobilized the four platform eco-circle entities of platform founder, platform provider (platform leader), user (demander) and user (provider) to develop a personalized production concept. Red Collar has studied and accumulated a database for over 10 years to meet over 99% of customers' personalized suit design needs, which not merely accurately satisfies customers' needs but reduces the enterprise's inventory and completes the effective allocation of resources. The platform employs big data technology to realize customized mass production and meet large-scale differentiated needs.

(2) Agile manufacturing: in the era of platform economy, everything is modular, and every enterprise will specialize in its products. Hence, on the basis of the personalized platform, Red Collar will further launch modular production. Premised on the three major components of platform economy (i.e. platform operator, platform participants and platform operating rules), Red Collar will respond to users' needs in an effective and coordinated manner by rapidly configuring all sorts of resources (including technology, management and personnel) so as to realize manufacturing agility. It delays the difference points on the production line, responds to customer orders quickly, and allows customers to receive suits within 7 days. Meantime, Red Collar actively explores the creation and application of cross-border trade e-commerce retail mode, builds a multi-language e-commerce trading platform, enriches the platform ecosystem, and realizes seamless connection of cross-border electronic commerce.

3.2. Change Management Model of Platform Economy
The platform-based business ecosystem breaks through the traditional linear transaction logic, regards the user base as a resource, and puts forward a brand-new network marketing mode, which offers the possibility to expand the traditional strategic management theory. This platform theory is different from the traditional linear marketing theory. It blurs the concepts of upstream and downstream, focuses on orders, and innovates the management mode. Red Collar reversely integrates production factors, comprehensively integrates and eliminates redundant departments, changes hierarchical management into platform-based management, and creates a platform-based and point-to-point flat management mode to realize barrier-free point-to-point communication among departments. Apart from that, it establishes a management mode with the customer service center as the nerve center. All the customers' demands are collected to the customer service center, and the customer service center directly issues instructions point to point, mobilizing the company's resources to complete the order.
Based on the node management of the platform, Red Collar finally realizes a complete and customized business operation mode and realizes the network-based management of information flow, capital flow and logistics in an all-round way.

3.3. Platform Economy Reconstructs Supply Chain

Source: Author drawing
Figure 3. Four platform organization architecture design

Source: Author drawing
Figure 4. Industrial chain restructuring
One of the driving factors for the transformation and upgrading of China's traditional manufacturing industry is that industrial efficiency in supply chain, organization and management drive the transformation and upgrading of traditional industries. Following the popularization of the platform business model facilitated by Internet economy, a large number of inefficient and redundant links in the traditional supply chain are gradually disappearing and new high-efficiency links are emerging. The traditional internal supply chain operation mode is classified into a pushing-type internal supply chain that uses inventory to drive sales and a pulling-type internal supply chain that uses customer orders to drive production. Currently, most enterprises are in the process of transformation from pushing-type to pulling-type. However, even it is the pulling-type internal supply chain, they are still oriented to industrialized mass production, while Red Collar Group's pulling-type internal supply chain management focusing on "source point theory" has realized industrialized personal customization. "Source point theory" is that the manufacturer produces suits with customer needs as the source point, so as to meet the differentiated needs of each customer. At the same time, compared with the traditional supply chain, it is also in possession of more abundant capital flow, extremely short delivery period and realizes scale effect. In Red Collar Group's platform service mode, the innovative concept of integrating logistics, capital flow, business flow and information flow runs through the whole process of Red Collar's supply chain management service, putting a higher premium on core competitiveness, decreasing intermediate links, saving logistics costs and management costs, mastering information in real time and responding to market demands quickly. Red Collar's "four flows in one" operation platform is shown in Figure 2. This platform can meet the personalized and fragmented needs of industrial manufacturing to return to the high end of the value chain without being "squeezed" by middlemen, distributors and agents, thus overturning the traditional smile curve.

Simultaneously, the platform model of Red Collar can be popularized to help transform and upgrade China's traditional manufacturing industry.
4. Conclusions and Prospects

The transformation and upgrading of traditional industries is an old research problem, but on account of the significant position of traditional manufacturing industry in China's economic structure and the arduous difficulties it faces during economic structure transformation, researchers are still keen on studying this issue as ever. Based on a single case analysis of Red Collar Group's use of platform economy for transformation and upgrading, this paper seeks the positive impact of platform economy on the transformation and upgrading of traditional manufacturing industry and offers strategic support for the transformation and upgrading of traditional manufacturing industry in the new economic form. Proceeding from Red Collar Group, this paper analyzes the role of platform economy as a significant means of transformation and upgrading of traditional manufacturing industry, and draws the conclusions as below: in the first place, platform economy has changed the production mode of Red Collar, and enhanced the production efficiency and product diversity via the internal platform; furthermore, it helps Red Collar to build a flat organizational structure, eliminating redundant links of internal communication; finally, platform economy reconstructs Red Collar's supply chain, plays the role of the supply chain as one of the three pillars of the enterprise, and optimizes the traditional channels, operations, costs and other links. The success of Red Collar reveals that platform economy can promote industrial clusters, integration and ecologization with a brand-new mechanism and raise the efficiency of transformation and upgrading of traditional industries. Platform economy will turn into one of the significant strategic modes of transformation and upgrading of traditional industries in China. Platform economy exerts a positive impact on traditional manufacturing and even the entire traditional industry.

As an exploratory and interpretive research, there still exist some deficiencies in this paper: firstly, this paper is merely a single case study, which has its limitations. Thus, it is required to do a comparative study of multiple cases under different scenarios to intensify the test of several conclusions proposed in this paper and expand their applicability. Next, the elaboration and demonstration of the conclusions in this paper need to be further deepened from a large number of researches from multiple perspectives, at multiple layers and using multiple methods, such as empirical research from the point of view of supply chain, or follow-up research, so as to test and expand the conclusions.

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