The Influence of E-Commerce Development on Traditional Retail Industry Under the Background of "Internet Plus"

Fengxian Yang[✉] and Limei Zhou

Business School, Shandong University of Political Science and Law, Jinan, China
Kanxink123@163.com

Abstract. Under the background of 'internet plus', the development of e-commerce impacts deeply the traditional retail industry. This paper analyzes the different influences of the e-commerce on different segments of traditional retail industry under the background of internet. Firstly, we analyzes the development data of internet and e-commerce in China traditional retail. Then, this paper takes the business quota as an index to measure the development of traditional retail industry, and the e-commerce transaction quota as an index to measure the development degree of e-commerce. By using regression analysis, it is found that the development of e-commerce has a significant impact on convenience stores and retail pharmacies, but has little impact on supermarket chains. Combined with the above conclusions, this paper puts forward some suggestions on the development of different retail industries under the internet background.

Keywords: E-commerce · Traditional retail stores · Internet plus

1 Introduction

With the development of internet and mobile e-commerce, new retail has increasingly become the new favourite of the times. At the same time, the development trend of traditional retail industry was not looking promising. Many physical retail stores are facing the "closing tide", and the competition in the physical retail industry is intensifying. In this context, this paper studies the impact of the continuous development of e-commerce on the physical retail industry, and even the various influences on different segments of retail industry. Further, we discuss the transformation of traditional retail industry under the internet background.

2 Literature Review

For the retail industry, according to the national standard of retail format classification (2004), China divides the retail industry into two categories: with stores and without stores, with a total of 17 retail formats.

2.1 Negative Effect

The impact of e-commerce development on retail industry has been studied in many articles. Zhang et al. (2016) found that there is a Grainger causality relationship existed between the turnover of e-commerce and the turnover of physical retail through empirical through empirical test. And the e-commerce has a statistically significant negative relationship with the physical retail industry. Moreover, this paper makes a further empirical analysis on the different of formats retail industry and finds that the influences are different among various retail business. Dong (2018) finds that as a new sales model, e-commerce will have a series of impacts on the traditional retail industry. E-commerce has attracted some customers of the traditional retail industry, reduced the sales profits of the traditional retail industry, and led to the common phenomena such as the closure of supermarkets and the idleness of commercial houses.

Jia et al. (2017) points out that the large retail enterprises will form a new marketing, competition and management model in the future, such as integrating online and offline, carrying out cross-border collaboration with a variety of consumption formats and service experience as the core, and making the sale as informativeness and contextualization.

2.2 Positive Impact

Li and Ma (2019) point out that E-commerce promotes the innovation speed of modern service concept in physical retail. With the help of the "self support + platform" model, E-commerce has brought important development opportunities to the physical retail industry, and greatly improved the operation efficiency of the bricks-and-mortar retail. On the other hand electronic commerce has changed people's working methods and consumption ideas and eroded the offline market. Many physical retail enterprises will find it difficult to survive because they can't meet people's needs. Chen (2018) pointed out that e-commerce technology can promote commodity circulation. It changes the way retailers presenting product information and consumers obtaining product information, so as to improve the efficiency of demand matching. However, the author is also worried that consumers' offline search costs may lose market efficiency.

Based on above analysis, the existing discussion on e-commerce and traditional retail industry mostly stays at the overall level, lacking deeper research on the subdivided fields of traditional retail business. For the impact of e-commerce development on traditional retail industry, many studies stay in the overall level such as the concept, characteristics and development trend. Lacking of the deep discussion and research on the specific areas of the traditional retail industry and the questions of how response and transformation should be done in their subdivided areas. Based on above reasons, this paper takes convenience stores, large supermarkets and professional stores as the research object, using the business quota as the index to measure the development of retail industry, to discuss the impact of e-commerce on the subdivided fields of traditional retail industry. This paper tries to analyze the current situation of different fields of retail business and also puts forward the transformation ideas and measures of traditional retail industry with different formats under the new retail background.

3 Research Process

3.1 Variable Design

This paper studies the impact of e-commerce development on the segmentation of traditional retail industry. The traditional retail industry is divided into three types: large supermarkets, convenience stores and professional stores such as pharmacy stores. That is mainly based on the following two considerations. Firstly, These three retail formats all have abundant commodity categories. And because they have different categories and business scope, their characteristics and business methods are different. Among them, supermarkets are mainly engaged in comprehensive commodities, and sales areas are set up according to different commodity classifications, with a wide range of business scope and a wide range of radiation areas and different groups. Convenience stores mainly operate daily necessities, with a relatively narrow business scope, and the radiation area and target population are limited to a certain small area. Professional stores operate a specific type of goods, such as drug stores, fresh food stores, home appliance stores, etc. These professional stores not only provide professional and targeted goods, but also ensure the diversity of goods. Customers can compare in many aspects while meeting diversely specific needs.

When analyzing the business scope and commodities of various retail formats, Chen (2015) found that the development of e-commerce had an impact on the three retail formats of convenience stores, supermarkets and professional stores, but the impact intensity was different. Therefore, selecting convenience stores, chain supermarkets and professional stores as the sales of traditional retail industry and analyzing them as the indicators to measure the development of retail industry can have a more obvious comparison and effect.

3.2 Model Building

In this paper, the linear regression model is adopted, and its general form is:

$$Y_t = \beta_0 + \beta_1 X_t + U_t \tag{1}$$

X_t represents the value of independent variable in period t, Y_t represents the value of dependent variable in period T, β_0 is a constant term, β_1 is the regression coefficient, U_t represents the error term. That is, other factors that may affect the dependent variable which are immeasurable except the independent variable.

We use this model, the sales of convenience stores, large supermarkets and professional stores are taken as dependent variables, and the transaction volume of e-commerce is taken as independent variable. Next we verify whether the independent variable is the main factor in the model, whether it plays a decisive role and whether there is a linear relationship, so as to analyze the different impact of e-commerce on the subdivided fields of traditional retail industry.

3.3 Data Selection

Due to the short development time of e-commerce in China, most of the existing statistical data are short and incomplete. Therefore, the data used in this paper are mostly the data

released by official institutions, combined with the data of third-party institutions and existing research. It includes the statistical survey data such as <the statistical report on China's e-commerce> issued by the Ministry of Commerce, <the China Statistical Yearbook> issued by the National Bureau of statistics, and <the forecast of convenience stores - A Study on the future trend of retail formats of China's convenience stores in 2019> by YiOu think tank, as well as the statistical data in the existing research. In order to ensure the accuracy and objectivity of the analysis results, this paper classifies, checks and compares the collected data to ensure the accuracy of the results.

Based on this, convenience stores, supermarkets and specialty stores from 2000 to 2019 are selected as the representatives of the traditional retail industry. The sales volume is used as the development index of the retail industry and as the explanatory variable Y_t for analysis. For the development of e-commerce, the e-commerce transaction volume is selected as the measurement index and as the explanatory variable X_t.

3.4   Model Regression

According to the results of regression analysis, we can know that the impact data of e-commerce transaction volume on convenience stores, chain supermarkets and retail pharmacies can be summarized in the Table 1.

3.5   Empirical Results

3.5.1   Convenience Store

According to the data in the table, we can see that the R-squared value of the impact of e-commerce transaction volume on convenience stores reaches 0.9915, close to 1, indicating that the goodness of fit of the model is good. $P > F$ value and $P > t$ value are less than 0.05, indicating that they are significant at the 95% confidence level; The standard deviation is about 5.82, and the data is relatively stable; The estimated coefficient is 109.0394, indicating that there is a positive correlation between the independent variable and the dependent variable, that is, with the development of e-commerce, the turnover of convenience stores will also increase.

As the retail terminal which is the most closest to customers, convenience stores cater to customers' demand for instant consumption on the one hand. On the other hand, many traditional convenience stores rely on online platforms, such as Shunfeng, Jingdong and other large e-commerce platforms to join the convenience store industry,

Table 1. Summary of regression analysis result

	Standard deviation	P > F	P > T	R-squared	Estimation coefficient
convenience stores,	5.817	0.0003	0.000	0.991	109.039
chain supermarkets	16.243	0.2298	0.230	0.429	24.4207
retail pharmacies	15.254	0.0002	0.000	0.993	327.993

increasing the proportion of fresh food, providing cold chain logistics, and realizing independent delivery in order to open the fresh food market. Based on those, many traditional convenience stores combine online and offline, and increased the revenue.

3.5.2   Chain Supermarket

For the impact of e-commerce transaction volume on chain supermarkets, the R-squared value is 0.4297, which is small, indicating that the goodness of fit of the model is poor; And P > F and P > t are 0.2298 and 0.230 respectively. Within the 95% confidence level interval, they can not pass the significance test, which shows that the impact of e-commerce on chain supermarkets is not very significant.

In fact, the concentration of China's supermarket industry is low. According to data, the total market share of China's top five supermarkets in 2017 was 27.6%, while that of the United States was 99.1%. The insufficient supply chain management level and the blocked commodity circulation channels may be an important reason for the low concentration of domestic supermarkets. When commodities enter local markets, they often pass through the dealers in each region. Each region is independent of each other, and the commodities and information cannot be effectively circulated and communicated, resulting in the inability of chain supermarkets to effectively combine online and offline resources to unleash their advantages in the process of expansion.

3.5.3   Retail Pharmacy

The standard deviation of the impact of e-commerce transaction volume on retail pharmacies is about 15.25488, with small and stable data; The R-squared value is 0.9936, close to 1, indicating that the goodness of fit of the model is good; P > Both F value and P > t value are less than 0.05, which can pass the significance test within the 95% confidence level interval; And the estimated coefficient is 327.9936, indicating that there is a positive correlation between the independent variable and the dependent variable, that is, the turnover of retail pharmacies increases with the increase of e-commerce transaction volume.

In recent years, retail pharmacies have been adapting to the trend of mobile internet development, and the new modes of "Internet plus medical" and "Internet plus medicine" have brought about new opportunities for development of pharmaceutical retail enterprises. On the one hand, many newly promulgated policies of the pharmaceutical industry recently are conducive to the development of drug retail. On the other hand, relying on the financial support and supply system of large-scale online platforms, drug retailers can achieve nationwide drug circulation and have a good development momentum.

3.6   Conclusions

According to the above analysis results, we can know that e-commerce transaction volume has a significant impact on the turnover of convenience stores and retail pharmacies. Since the estimation coefficient is positive, there is a positive correlation. That is, with the development of e-commerce, the turnover of convenience stores and retail pharmacies will also increase; The impact of e-commerce transaction volume on the turnover of chain supermarkets is not significant.

4   Relevant Suggestions

On the basis of the results of the analysis above, it can be seen that the development of e-commerce has a great impact on the small-scale traditional retail industry represented by convenience stores and retail pharmacies, and has little impact on the traditional large-scale retail industry, such as chain supermarkets. Based on these two aspects, the following suggestions are made for the challenges of traditional retail industry in the new retail context.

Firstly, the traditional large-scale retail industry (chain supermarket) needs to realizes the integration of online and offline. From the perspective of traditional large retail enterprises, they have smooth channels, goodwill and convenient infrastructure, and can collect and analyze information with the help of online platforms. Based on the advantages of scattered and small retail industry in terms of capital, channels and manpower, the combination of information and goods can be realized in terms of customer preferences and commodity pricing through the online platform, so as to effectively reduce the problems of insufficient customer experience, exaggerated information and after-sales rights protection. Retailers can integrate resources on the online platform, and then select appropriate channels for commodity circulation through the offline platform, so as to realize the effective connection of commodity sales, express logistics and inventory management activities and in order to achieve greater economic benefits.

Secondly, the traditional small retail industry has improved the logistics system and formed scale advantages. The coverage of traditional small-scale retail business is limited. Through e-commerce platform, we can expand the coverage and depth of business and increase business benefits. This needs the guarantee of logistics distribution capacity. The logistics distribution of convenience stores needs to have the ability of timely distribution and cold chain distribution at least. In addition to relying on the logistics services of third-party enterprises, small retail industry should also improve its own logistics system, improve its logistics distribution capacity, promote retailers to enter communities and rural areas, and complete the regional logistics distribution in time to form a scale advantage.

Thirdly, improve management level and gain market competitive advantage. n the context of the rapid development of the industry, many traditional retail industries have the problems of serious homogenization of goods and services and low level of enterprise management. In terms of commodity retail, most similar retail stores have similar commodities, imitate each other's operation mode, and provide similar services. Retailers often rely on "price war" to attract customers, unable to form brand trust and dependence. Therefore, the retail industry should actively cultivate professional talents, improve management level, form its own unique brand style and establish user stickiness, so as to obtain greater market competitive advantage.

References

Sun X, Lu C, Zhang Z (2019) Consumption degradation or consumption stratification-study on the dynamic characteristics of the change trend of Chinese residents' consumption. Bus Res 08:13–16

Du R, Jiang K (2017) New retail: connotation, development motivation and key issues. Price Theory Pract (02):4–13

Chu C, Hu J (2018) Dragon warbler research on the development of new retail from multiple perspectives. Econ Trade Pract 19:186–188

Jia K, Yu C, Zhang P (2017) Current situation, trend and industry development strategy of China's large retail industry. Econ Res Ref 46:23–24

Chen J (2020) On the impact of e-commerce on physical retail industry. Gansu Vocational College of Finance and trade

Jin X (2015) An empirical study on the effect of e-commerce development on China's economic growth. Wuhan University of engineering

Yuzhen F (2019) Empirical study on the effect of e-commerce development on economic growth in China. Ind Technol Econ 29:40–44

Zhang H, Chen J, Li W (2016) The impact of e-commerce development on commercial real estate: observation and empirical research from China. China Real Estate 6:13–24

Dong G (2018) Spatial characteristics of e-commerce in China and its impact on the real economy-statistical measurement and empirical research based on Taobao e-commerce data. Henan University