



# An Empirical Study on the Economic Development Driven by Live Streaming Under the Background of Big Data Taking Taobao Platform as an Example

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**Abstract.** Under the background of the rapid development of the Internet and the increasingly widespread application of big data, the traditional e-commerce operation model has been continuously upgraded, which has promoted the continuous development of the live broadcast industry chain. Taking the Taobao platform as an example, the article summarizes the economic benefits of live broadcast delivery from various aspects, and explores its positive impact on economic development. Finally, practical solutions and improvement suggestions are put forward for the common problems in the live broadcast delivery industry and its impact on the subsequent sustainable development of the industry.

**Keywords:** Big Data · Live Broadcast With Goods · Regression Analysis · Economic Development

## 1 Introduction

In recent years, the popularity of digitalization has driven the rapid development of various industries, and live streaming has become an emerging synonym for the e-commerce industry. Compared with pictures, texts and short videos, live broadcasts can communicate and transmit information more directly with consumers. The commercial platform represented by Taobao provides a good display opportunity for the anchors and meets the various needs of consumers. Under such a series of backgrounds, this article explores the relationship between live streaming and economic development by combining multiple aspects, and gives corresponding policy recommendations accordingly.

## 2 Research Background

### 2.1 Big Data Background Support

Nowadays, informatization has begun to develop and popularize in many fields, and various mature science and technology are gradually changing people's way of life. Among

them, big data, as a new trend of thought and new concept in the field of computing, can extract the key elements required under the complex data information, and can also deal with many different types of information data with high quality and effectively. Improving the efficiency of information processing is attracting people's attention step by step, which in turn triggers extensive thinking and discussion on big data in the business field, and accordingly drives the leap-forward development of related e-commerce industries such as "live streaming".

## **2.2 The Business Model of Live Streaming with Goods Is Becoming More and More Perfect**

### **2.2.1 The Industry Definition of Live Streaming**

"Live broadcast with goods" refers to the behavior of individuals or groups conveying relevant information to consumers through a series of methods during the live broadcast process, and ultimately prompting them to purchase products with goods. At present, a large number of Internet celebrities who rely on the popularity of Internet media have brought a lot of fresh blood to this industry.

### **2.2.2 The Business Model of Live Streaming**

In the business model of live broadcast with goods, the primary factor is the network anchor, that is, the Internet celebrity. According to their own ability and other factors, Internet celebrities can achieve qualified self-positioning and recommend appropriate products to customers. Secondly, the live broadcast platform should give strong support to the anchor. Connect customers with anchors, provide them with a channel of communication, and strengthen customers' willingness to buy to achieve a win-win situation. At the same time, the live broadcast terminal audience also needs to provide strong traffic as support. Only in this way can a satisfactory turnover in the live broadcast session be ensured. Finally, as a key factor in bringing goods, logistics is not only related to customer satisfaction, but also directly determines the size of their repurchase willingness.

### **2.2.3 The Development Prospect of Live Streaming**

The development of live streaming with goods is firstly the core factor of the positioning of online celebrities and the shaping of their capabilities, followed by the scene design in the online celebrity live broadcast, as well as the accumulation and realization of traffic as the terminal factor of online live broadcasting; finally, it is related to e-commerce and logistics. Cooperation. Investigating its root cause, the audience of online live streaming is consumers, and the source of the profit model of online streaming is fans and consumers. Then all directions should point to how to increase consumers' willingness to buy, expand the number of fans, increase the conversion rate, and increase the turnover. Therefore, live streaming should focus on the subjective feelings of consumers, from the perspective of consumers, so as to ensure its long-term development.

### 3 The Development Status of Live Streaming

#### 3.1 The Overall Benefits of the Live Broadcast Industry Are Good

In recent years, with the emergence and rise of the emerging sales method of online live streaming, the original market rules have been broken. Major e-commerce platforms have seized the opportunity and almost seized most of the market share of the offline retail industry. In 2020, the scale of China's live broadcast e-commerce market will reach 961 billion yuan, a substantial increase of 121.5% year-on-year. iiMedia Research Consulting analysts believe that with the continuous expansion of the "people and goods market" in the live broadcast e-commerce industry, live broadcast will gradually penetrate into all areas of e-commerce.

#### 3.2 The Live Streaming Business of Taobao Platform Has Grown Rapidly

Taobao, the e-commerce leader, accounts for the majority of live streaming sales. As of the end of 2020, the total sales of live streaming on Taobao platform has reached more than 400 billion yuan. On June 1 alone, Taobao Live generated 5.1 billion yuan in sales, and the number of businesses that started broadcasting during the 618 period increased by 160% year-on-year [1]. Compared with other e-commerce platforms in the same period, Taobao has an absolute dominant position in both the sales of top streamers and the types of goods sold.

During the "Double 11" period, live streaming accounted for most of the sales. On the day of the pre-sale of "Double 11" alone, the live broadcast sales performance of the two Alibaba's leading anchors has grown in a straight line. The total number of viewers in the live broadcast room exceeded 300 million, and the 8-h turnover was nearly 8 billion yuan [5].

Judging from Ali's public data, the economic benefits of Taobao's live streaming in 2020 are good. Compared with 2019, the total transaction volume has increased by 500%, and the number of live streaming merchants has also increased significantly. Among them, the top streamers are leading with sales exceeding 10 billion yuan.

### 4 The Impact of Live Streaming on Economic Development

The epidemic has accelerated the digital transformation of the real economy. Merchants and customers directly form a purchase channel for live delivery of goods, which reduces a lot of waste in the transportation of goods, realizes the direct connection between consumers and manufacturers, and greatly improves economic efficiency. The saved transportation costs and other expenses can feed back the link of live broadcast and delivery, so as to achieve sustainable growth and development [2]. Throughout the development history of live broadcast delivery in recent years, from rural live broadcast to drive local development, to government media delivery of goods to coordinate the tourism economy, there are platform merchants with a small amount of sales, and there are large sellers with more than 100 million yuan, and so on. Everyone of these bringing goods from live broadcast are contributing to the development of the economic environment [3]. In the

context of big data, what we see should not only be the annual turnover of 400 billion yuan in Taobao live streaming, but also behind this high figure, the contribution of each consignor is their dedication, let the economic-driven snowball get bigger and bigger, and truly combine live streaming and economic development to complement each other and benefit all aspects of people's lives.

## 5 Empirical Research

### 5.1 Explanation of Variable Selection

The market economic growth amount acts as the explained variable in the article, namely the dependent variable Y. This article selects the following three aspects as independent variables from many factors:

X1 = scale of live broadcast users. This paper assumes that the scale of live broadcast users is positively correlated with the growth of the market economy.

X2 = Number of listed products. In this paper, it is assumed that the number of products on the shelves is positively correlated with the growth of the market economy.

X3 = Sales. This paper assumes that sales are positively correlated with market economic growth.

### 5.2 Model Construction

Taking the market economic growth (Y) as the dependent variable, the scale of live broadcast users (X1), the number of products on the shelf (X2), and the sales volume (X3) as the independent variables, the regression model is constructed as follows:

$$Y = C + (\beta_1 X_1) + (\beta_2 X_2) + (\beta_3 X_3)$$

Among them, C is a constant, and  $\beta_1$ ,  $\beta_2$ , and  $\beta_3$  represent the scale of live broadcast users, the number of products on the shelves, and the sales volume, so as to study the influence of these three factors on the market economic growth (Table 1).

### 5.3 Cointegration Test

The explanatory variables selected by the model are deterministic variables, not random variables, and are independent of random errors, and there is no complete linear relationship between the explanatory variables.

At the same time, using Eviews software to conduct ADF test on the independent variable and dependent variable (the confidence level selected in this paper is 95%), the ADF value is lower than 5%, which can prove that there is no unit root in the series and it is stationary Time series can be analyzed by multiple linear regression.

### 5.4 Establishment of Regression Model

According to the calculation results of SPSS statistical software, combined with the regression model, the following formula is constructed:

$$Y = 233.895 + 0.005X_1 + 0.996X_2 + 0.690X_3$$

**Table 1.** Variable indicators of Taobao platform in some months from 2019 to 2020

Time	Number of live broadcast users (10,000 people)	Number of products on the shelf (10,000 pieces)	Sales (100 million yuan)	Market economic growth (100 million yuan)
2019.06	155.6	355	112.3	645.4
2019.07	160.2	359	117.5	670.3
2019.08	166.8	366	123.4	685.7
2019.09	177.4	372	130.6	702.2
2019.10	184.9	377	134.5	713.9
2019.11	196.3	384	138.2	720.9
2019.12	201.5	396	141.8	728.6
2020.01	205.3	407	170.6	776.8
2020.02	225.3	422	202.8	793.4
2020.03	234.1	430	205.2	805.2
2020.04	247.4	436	209.1	814.7
2020.05	256.8	441	211.3	816.6
2020.06	273.5	453	213.2	823.5

Data Source: Compiled by The Author

**Table 2.** SPSS software running results

Model	R	R <sup>2</sup>	Adjusted R <sup>2</sup>	Standard Estimate Error
	0.998	0.977	0.969	0.856

Data Source: Compiled by The Author

**Table 3.** Coefficient test results

Model	Unstandardized coefficients		Standard coefficient	t	Sig.
	$\beta$	Standard error	Trial version $\beta$		
C	233.895	131.409	/	1.780	0.109
VAR00002	0.005	0.007	0.036	0.685	0.511
VAR00003	0.996	0.493	0.544	2.021	0.074
VAR00004	0.690	0.414	0.451	1.667	0.130

Data Source: Compiled by The Author

## 5.5 Analysis of Empirical Results

The confidence level selected in this paper is 95%. It can be seen from Table 2 that the  $R^2$  value of the regression operation result is 97.7%, which is close to 1, indicating that the linear fit between the variables is very high. Combined with the coefficient test results in Table 3, the  $\beta$  values of the coefficients of the three independent variables are all greater than 0, indicating that each variable factor has the same direction of change in economic growth.

At the same time, a detailed analysis of the test results in Table 3 shows that, under the premise of determining constants, when the number of products on the shelf (X2) and sales (X3) remain unchanged, the number of live broadcast users (X1) changes by 10,000 for every 10,000 people. The average same-direction change in the market economy is 00.5 million yuan, indicating that although the scale of live broadcast users has a driving effect on the market economy, its contribution is small. In the same way, when the number of live broadcast users (X1) and sales (X3) are fixed, the number of products on the shelves (X2) increases by 10,000 pieces, and the market economic growth (Y) increases on average by 99.6 million yuan, analogous to other. When the independent variable remains unchanged, the changes in market economic growth (Y) caused by a single variable, and the number of listed products (X2) have the greatest impact on the Y value. And after adjusting the original correlation coefficient, the  $\beta$  value of the number of listed products (X2) is 0.544, which is higher than the adjusted  $\beta$  value of the number of live broadcast users (X1) and sales (X3), which proves that the number of listed products (X2) has the greatest impetus to the market economy. But at the same time, it is not difficult to find that at the 95% confidence level, the correlation coefficient of the three dependent variables is low, which shows that the development of the live broadcast delivery industry has just started, and it cannot well drive the development of the e-commerce market economy. At the same time, the development of the e-commerce industry and live streaming have a two-way development relationship, and there is a two-way influence between the two. Economic development can drive the progress of live broadcast delivery, and conversely, live broadcast delivery can also promote the development of the overall e-commerce economic environment. Therefore, under the current big data background, we should pay more attention to the linkage between live broadcast delivery and overall economic development, so as to ensure that the live broadcast delivery industry continues to make progress in its development.

## 6 Solutions to the Problems of Live Streaming

### 6.1 Legal Support

The continuous development of live broadcast delivery will inevitably lead to a series of problems such as false propaganda and poor product quality. Under the premise that the supervision system is not perfect, it is necessary for the state to further improve relevant laws and regulations, and fundamentally allow businesses and consumers to achieve. According to the law, the platform also needs to restrict the behavior of merchants, raise the threshold for bringing goods, and minimize the possible loss rate of consumers [4]. While consumers are being protected, they should also pay attention to their own actions

and show sufficient respect for merchants and platforms. In addition to the need for legal norms, it is also necessary to strengthen the supervision of relevant departments, strengthen industry self-discipline, encourage consumers to participate in monitoring and reporting methods, coordinate and collaborate to purify the chaos of live broadcasts, and create a more complete sales system. While protecting the rights and interests of consumers, providing better service.

## **6.2 Maintain Innovation and Development**

Although the live-streaming delivery model has innovations and changes compared to traditional e-commerce, the essence of its success has not changed. The front-end and back-end systems of live-streaming delivery are equally important. The inefficiency of any link will affect the overall efficiency of live-streaming delivery, which affects whether consumers are willing to continue to participate in live broadcast delivery and purchase products through live broadcast delivery channels. When you enter the track of live streaming, you need to better understand some of the necessary channels needed in this track. For example, how do you maintain communication with your suppliers to ensure that when your goods are sold, how to provide timely replenishment of supply; another example, how do you negotiate better with your logistics system to ensure the transportation of your goods The road is smooth; for another example, how do you ensure that your buyers can get you the products you deserve.

On the road of innovation, all the links are interlocked, and it is necessary to better improve the value and reflect the beauty. If you don't have such an experience, you can't really hold the direction you want, and you can't In the coordination of the entire channel, find an appropriate way to better create feasibility.

## **6.3 The Role of Industry Supervision**

The essential difference between live streaming and the previous sales behavior is that it can achieve "integration of quality and efficiency", that is, it can not only bring real money and silver sales directly through the delivery of goods, but also enhance the brand through the brand exposure in the live broadcast room of the anchor. The credibility of the media, media experience, and fan base are all important factors that can stimulate consumers to buy. At the same time, relevant management departments should also pay attention to the improvement of laws and regulations, increase the illegal cost of merchants, and timely verify and fill in the gaps of industry problems reported by consumers, so that merchants can prevent illegal acts while the platform develops stably.

## **6.4 Personal Promotion of the Host**

The live broadcast of online delivery of goods is still a new thing and requires long-term market testing, but it will become a major trend in future business development. As online live streaming of goods has become a normalized new marketing method, the society will need more and more online anchors with goods. The anchor's ability to carry goods directly determines the sales of goods. The stronger the anchor's ability to carry

goods, the higher the sales volume. The effect of this is incomparable with the traditional sales model, so the platform needs more “technology + business”. Compound talents. In this case, the training of anchors is particularly important. Honesty and trustworthiness, self-discipline, etc. must be the basic criteria for anchors to have. At the same time, professional knowledge, sales skills, and adaptability are also indispensable. In this way, all links during the live broadcast can be smoothly connected and the expected effect of bringing goods can be achieved.

## 7 Conclusion

At present, the live broadcast economy is becoming a new driving force for activating consumers to restart, and it is a bright color of the new normal Chinese economy. The popularization and application of big data and the rapid development of 5G have provided infinite possibilities for the future live broadcast industry, and the new e-commerce industry form represented by Taobao live broadcast should actively seize this opportunity and seize it with freshness. Catching the attention of users and providing consumers with a more complete shopping experience. The live broadcast delivery industry should also continuously improve the supervision mechanism, improve the quality of live broadcast content, develop their own characteristics, and dare to squeeze out “moisture” to encourage consumers to consume rationally healthy sustainable development. It is expected that in the next few years, with the further enrichment of live broadcast content, the upsurge of live broadcast delivery of goods will continue to continue, and will continue to drive the development of the economic environment. At that time, the promotion effect of live broadcast delivery on the overall economy will be truly manifested.

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