

# A Study on the Application of Statistical Analysis Method of Big Data in Economic Management

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**Abstract:** This paper analyzes the application value of statistical analysis method of big data in economic management from the macro and micro perspectives, and analyzes its specific application from three aspects such as economic trends, industrial operations and marketing strategies.

**Keywords:** Big data; Statistical analysis; Economic management

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## 1 Introduction

At present, the society is in a key period of transformation, and the economic development is slowing down. Based on big data for statistic analysis, we can predict the economic trends in advance and provide important reference for the industrial development. Big data is becoming more and more important in economic management. Proper application is conducive to the optimal allocation of resources, combined with economic marketing laws to find valuable information to offer guidance to all fields of economic management.

## 2 The application value of statistical analysis method of big data in economic management

### 2.1 Macro perspective

In different eras, economic development exists regular characteristics. At the same time, there are various influential factors. In the past, statistical methods

have made it difficult to accurately predict trends in economic development. With the support of big data, it is possible to collect macroeconomic data in a unified way, analyze the principles of economic changes according to the relationship between the data, and then explore the laws and trends in economic development to better guide economic management. In practice, we can analyze the economic trends with the help of analytical tools such as the applications like “FusionInsight”, “Yonyou UAP”, “Sugon XData”, “SPSS”, and “Stata”<sup>[1]</sup>.

### 2.2 Micro perspective

From a micro perspective, to ensure development and maintain an advantageous position, companies need to conduct an accurate analysis of the industrial economic situation, and then formulate the strategic plans<sup>[2]</sup>. At present, competition in various industries is heated, and profit margins are gradually declined. To better meet the challenges, we can rely on big data to conduct statistical analysis in business operations, finance, risks, etc., to explore valuable information and help enterprises make scientific decisions. The specific directions of the application of big data statistical method is shown in Table 1.

**Table 1.** Application of big data in business management

Direction	Content
Strategic Analysis	Help enterprises develop strategic trends
Business analysis	Analyze business operations through thematic analysis and income analysis
Market circulation	Help in market circulation with data productionalization or visualization

Continued table 1

Direction	Content
Delicacy management	Use data extracting tools and data mining technology to provide customers with personalized service and conduct management of a life cycle
Optimization of users' experience	Use big data technology to analyze customers or users, clarify their experience, and develop word-of-mouth marketing
Risk Management	Use data analysis to find data of the risk and optimize management

### 3 The application of statistical analysis of big data in economic management

#### 3.1 Analysis of economic trends

In economic management, the use of statistical analysis of big data can regulate and control the macroeconomic trends. In the operation of the marketing economy,

big data statistics can analyze its laws in internal development, and accurately analyze industrial development, economic crisis and other issues, which is conducive to the rational operation of capital and allows enterprises to scientifically adjust their investing activities. At present, the market is highly open, and there may be links between risks in various industries, which has affected the development of enterprises within and beyond the industrial chain[3]. Therefore, it is necessary to conduct a macro analysis of the economic development through big data. In addition to its predictive function, big data analysis can also promote industrial development with historical data, and evaluate economic development, benefit stakeholders, and grasp the overall developmental laws of the industrial economy, and then explore the industrial changes in the economic cycle. It clearly affects economic development, prompting enterprises to properly control the time of entering and exiting the market<sup>[4]</sup>. Table 2 is the ranking data of the companies with the highest economic growth in 2018 through the statistic method of big data :

**Table 2.** Enterprises' Ranking in Economic Growth in 2018 through big data

Enterprise	Disclosure of valuation	Economic valued growth in 2018
Ant Financial	\$ 150 billion	150%
Cambricon	\$ 2.5 billion	114%
Quora	\$ 2.25 billion	114%
VIPKID	RMB 20 billion	100%
Net Neophytes	RMB 130 billion	100%
Jingdong Digital Technology	RMB 133 billion	100%
Tao Ticket	RMB 14.616 billion	50%
Kingsoft Cloud Group	\$ 2.373 billion	43%
NetEase Cloud Music	\$ 3.5 billion	43%

#### 3.2 Industrial operations and marketing strategies

##### 3.2.1 Industrial operations

The aspect of industrial operations and management may be affected by macroeconomic changes, which in turn will affect the economic development of micro-issues. In the process of business operation and management, the process is highly similar, mainly including processing management, planning and implementation. A lot of repetitive work can be removed and the reasonable allocation of internal resources can be achieved by using big data to conduct

statistical analysis and analyze the differences between the enterprise's micro management and processing management, as well as optimizing the operation and management, which can help selects representative results to fully reflect the overall operation of the industry, and providing an important reference for industrial adjustment and reform on supply<sup>[5]</sup>. Under the application of big data statistics, the macro-economic and micro-economic developmental trends and laws are connected, and the current economic trends from the perspective of the enterprise are analyzed, so that the enterprise can formulate developmental plans according to national appeals, control the correct direction of

development and develop its industrial operation, and continuously make the production vital in the society.

### 3.2.2 Formulation of marketing strategies

Using big data analysis can lay a good reference for enterprises' planning and formulation of marketing strategies. In practice, a marketing data platform needs to be developed. The company's operation related to service, commodity categories, consumer groups, and market dynamics are transformed into the systematic platform for detailed analysis and unified management. This system can use different algorithms to learn enterprises' marketing data according to the products that customers are keen on, remove redundant information, and then find out trends of service development. When the enterprise clarifies the consumers' actual needs, they can better adjust the service content and control the service trends<sup>[6]</sup>. According to the analyzed results, optimize and adjust the current selling model and formulate future selling plans. For the goods and services that consumers are keen on, appropriately increase the proportion of the products and sales. At the same time, reforms such as slow-selling commodities and unpopular services also need to be transformed to develop their strengths and minimize their weaknesses. The use of data statistics lays a reference for the formulation of enterprises' selling planning, strategies for higher profits and industrial reputation, thus maintaining the sustainable development of enterprises<sup>[7]</sup>.

## 4 Marketing survey

In addition to collecting information in the current market, big data statistics can also play an active role. Online surveys or voting can be used to provide a communicating channel for consumers to promptly obtain their feedback on products and services. With the support of this technology, an enterprise can conduct an objective evaluation of its marketing results, operating status, and quality of the products. We can find common issues through feedback to optimize marketing strategies and ensure that the formulation of marketing strategies keeps pace with the marketing demands.

## 5 Introduction of a Case

In 2015, Jingdong E-commerce formulated the "3F" strategy, that is, Factory to Country, Finance to Country and Farm to Table, and comprehensively solved three rural problems. Based on the national strategy of

targeted poverty alleviation, JD.com and the State Council launched poverty alleviation cooperation to maximize the benefits of poverty alleviation. In terms of its industrial operation and management, it has formulated strategies for finance, logistics, sales and brands, focusing on "agricultural products to the city". At present, the urban living standards are improving, and the demand for healthy and green products is also rising<sup>[8]</sup>. The poor areas have natural environment, less industrial pollution, and the guaranteed quality of their agricultural products. Therefore, they meet the urban consumer groups' needs. JD.com uses big data to analyze the types of agricultural products sold on its platform, summarizes the proportion of sales of ordinary products, and analyzes the popularity of agricultural products among urban consumers. Table 3 shows the results in the data analysis:

**Table 3.** Distribution of categories of the agricultural product on Jingdong platform in 2015 and 2016

Category of the products	In 2016	In 2015
Snacks	9.31%	2.36%
Instant foods	8.97%	4.36%
Eggs	7.74%	0.70%
Apple	7.62%	0.95%
Rice, noodles and grains	7.12%	3.67%
Roasted Nuts	5.66%	2.31%
Cooked food	5.11%	1.67%
Pork	5.06%	0.56%
Sausage / Bacon	4.49%	1.49%
Kiwi	4.44%	0.55%
Green tea	4.19%	0.70%
Dried meat	3.41%	0.89%
Others	26.87%	79.87%

According to the data in Table 3, in 2016, Jingdong's e-commerce platform sold agricultural products in poor areas, and the most popular categories were eggs, nuts, cooked food, snacks, and rice, noodles, grains. Among the best-selling fruits, kiwi and apple account for a relatively high proportion. Compared with the data in 2015, the sales of snacks, fruits and eggs increased significantly. Among them, fruits increased by 8 times compared with 2015, eggs increased by 11 times, and tea sales also increased by 6 times. The above data fully demonstrate the accuracy of big data statistics in the analysis of the product sales, and show the popularity of green food in urban consumer groups<sup>[9]</sup>.

At the same time, JD.com uses big data to analyze the geographical distribution of consumer groups and

find out the provinces where agricultural products are selling best. Table 4 is the statistical data:

**Table 4.** Consumers' geographical distribution through big data

Areas of the consumers	Proportion of the sales	Products which consumers love
Beijing	12.21%	Apples, dried fruits, rice and flour, nuts
Chongqing	10.30%	Instant foods
Guangdong	9.11%	Roasted seeds and nuts, cured meat fish etc
Anhui	8.08%	Dried meat jerky, snacks
Shanghai	7.67%	Instant foods, snacks, dried food
Hubei	5.55%	Rice, flour and coarse cereals
Guizhou	5.41%	Fruits and green tea
Jiangsu	4.49%	Nut and snack
Tianjin	4.26%	Eggs and cured meat fish etc.
Others	32.92%	

The data in Table 4 shows that agricultural products account for relatively high sales in Beijing, Chongqing, Guangdong, Anhui, and Shanghai. Consumers in Beijing are keen on agricultural products such as apples, dry goods, rice, noodles and nuts. And they like to buy agricultural products from Xinjiang, Hunan, Shanxi and Northeast China. Shanghai consumers are keen on dry goods and snacks.

In addition, to optimize the development of selling strategies, JD.com uses big data statistical methods to analyze the consumers' ages and jobs.

**Table 5.** Consumers' ages through big data

Consumers' ages	Proportion of consumption	Occupation of consumption	Proportion of consumption
From 26 to 35 years old	48.94%	White-collar worker	30%
From 36 to 45 years old	15.77%	Teacher	10%
From 46 to 55 years old	12.56%	Students	22%
From 19 to 25 years old	12.03%	Doctor	8%
From 15 to 18 years old	5.59%	Artificer	9%
Over 56 years old	5.12%	Others	21%

It can be seen from Table 5 that consumers between 26 and 35 years old consume a high proportion of 48.94%. At the same time, big data statistics show the consumers' occupations. Among them, white-collar consumers account for 30%, and teachers and students account for 22%. For the gender of consumers, the proportion of female consumers is higher. For example,

97% of women buy a Miao Batik bag from Guizhou on the platform. Through the above-mentioned JD.com, the big data statistical method is used to conduct accurate analysis of online product sales, consumers' areas and ages, which provides important references for companies to develop marketing strategies. At the same time, it provides a solid guarantee for the economic development of enterprises<sup>[10]</sup>.

## 6 Conclusion

In conclusion, the application of statistical analysis method of big data in economic management can have a double-sided impact on both the macro and micro economies. Enterprise's development requires a comprehensive analysis of the industrial trends of external economic development. With the support of big data technology, statistical analysis software is used to analyze the industrial economic data and conclude the rules. At the same time, in the operational management and formulation of strategies, big data can also be used to obtain valuable information to optimize the formulation of plans, and assists in economic management.

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