

# Enterprise Operation Management and Decision Optimization in the Era of Big Data

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**Abstract:** With the advent of the era of big data, profound changes have taken place in enterprise operation management and decision optimization. The purpose of this paper is to discuss how big data technology can change the operation mode of enterprises, improve the efficiency of decision-making, and analyze how enterprises can use big data technology to optimize the operation management and decision-making process. Through the collection, processing and analysis of a large number of data, enterprises can more accurately understand the market trends, consumer demand, product performance and other information, and then make more informed decisions.

**Keywords:** big data; Enterprise operation management; Decision optimization

## 1 introduction

This paper discusses how big data technology affects the operation management and decision optimization of enterprises. This paper analyzes how enterprises use big data technology to collect and analyze all kinds of data, so as to better understand market trends, consumer demand and product performance. In addition, the article also discusses how to use big data technology to improve the efficiency and accuracy of enterprise decision-making, and how to reduce operating costs and improve production efficiency. Finally, the paper discusses the influence of big data technology on the strategic planning and future development of enterprises.

## 2 The impact of big data technology on enterprise operation and management

### 2.1 Market trend analysis

“Big data technology has a significant impact on market trend analysis for businesses. By collecting and analyzing various market data, companies can gain a better understanding of market trends and consumer demands, thereby providing support for the formulation of their marketing strategies. For instance, analyzing user behavior data allows companies to determine user preferences for products, enabling targeted marketing campaigns. Additionally, by analyzing social media data, companies can gather insights into consumer opinions and feedback in order to make timely adjustments to their products and services.

Furthermore, big data technology helps businesses identify market opportunities and competitive situations. Through the analysis of market data, emerging markets and potential customer segments can be discovered, allowing for prompt adjustments to products and services to meet their needs. Therefore, big data technology plays a crucial role in formulating effective marketing strategies and conducting accurate market trend analysis for businesses.”



Figure 1 Application Diagram of Big Data in Enterprise Operation Management

### 2.2 consumer demand analysis

Big data technology can help enterprises better understand the needs and behaviors of consumers. By analyzing the data of consumers' purchase history, search records and social media activities, enterprises can formulate more accurate marketing strategies and improve consumers' satisfaction and loyalty. Big data technology has an important impact on consumer demand analysis. By analyzing consumers' purchase history, search records, social media activities and other data, enterprises can understand consumers' needs and behaviors more deeply, so as to formulate more accurate market strategies and improve consumers' satisfaction and loyalty. By analyzing the historical data of consumers' purchases, enterprises can understand consumers' preferences for different products, purchase frequency and purchase amount. These data can help enterprises adjust product characteristics, pricing and supply chain management according to consumer demand. By analyzing consumers' search records, enterprises can understand the product characteristics, brand preferences and purchase intentions that consumers pay attention to. These data can help enterprises optimize product search ranking, product recommendation algorithm, improve user experience and purchase conversion rate.

By analyzing consumers' activities on social media, enterprises can understand consumers' comments, opinions and suggestions on products. These data can help enterprises find and respond to the needs of consumers in time and improve the quality of products and services. For example, Table 1 is an analysis table of consumer demand factors.

**Table 1: Analysis Table of Consumer Demand Factors**

Consumer demand factor	Proportion
product quality	40%
price	25%
Brand reputation	15%
quality of service	10%
other	10%

### 3 The impact of big data technology on enterprise decision-making optimization

“Big data technology improves the decision-making efficiency of enterprises in the following ways: it automates and intelligently collects and organizes various types of data, while analyzing them in real-time, enabling businesses to obtain comprehensive and accurate data support within a short period. Through techniques such as data mining and machine learning, big data technology uncovers patterns and trends hidden behind vast amounts of data, helping companies better grasp market trends and consumer demands, thus formulating more precise marketing strategies. By conducting in-depth analysis and exploration of the data, businesses can gain a more accurate understanding of market conditions and consumer needs, leading to more scientific and rational decision-making. With the aid of big data technology, companies can gain better insights into market trends and consumer demands, thereby reducing decision-making risks. This is primarily manifested in several aspects: by analyzing large volumes of data, companies can predict market trends ahead of time to prepare themselves for potential risks caused by market fluctuations. Big data technology assists businesses in analyzing customer feedbacks and demands so that decisions can be made based on actual customer needs, reducing risks associated with not meeting those needs. Through comprehensive analysis of product performance using big data technology, companies can acquire deeper insights into their products' prospects in the market as well as sales situations; hence avoiding blind investments or mistakes in marketing strategies.”

### 4 The impact of big data technology on corporate strategic planning

#### 4.1 Strategy formulation support

Big data technology can help enterprises better understand market trends and consumer demand. By collecting and analyzing a large amount of consumer data, enterprises can gain insight into consumers' buying habits, preferences and needs, so as to make more accurate decisions in product research and development, marketing and brand promotion. For example, by analyzing users' search history and purchase records, enterprises can predict future market trends, make preparations in advance, and seize market opportunities. Big data technology can help enterprises to better formulate market strategies and competitive strategies.

Through the analysis of market opportunities and competitive situation, enterprises can accurately judge their own strengths and weaknesses, so as to formulate more accurate market strategies and competitive strategies. For example, by analyzing the product characteristics, price strategies and market share of competitors, enterprises can formulate more targeted market competition strategies. Big data technology can also help enterprises to better assess and manage risks.

#### 4.2 Monitoring and adjustment of strategy implementation

Through big data technology, enterprises can obtain and analyze all kinds of data in real time, including market data, consumer behavior data, sales data and so on. These data can provide enterprises with in-depth insight into market trends and consumer demand, thus helping enterprises to make more informed decisions. For example, if an enterprise finds that the sales of a product have dropped sharply in a certain period of time, it can understand the reasons by analyzing market data and consumer feedback, and take corresponding measures to make adjustments.

### 5 Enterprise decision-making optimization in the era of big data

#### 5.1 big data support for decision-making

In the era of big data, enterprises can use rich data resources to optimize the decision-making process and improve the quality and efficiency of decision-making. By collecting, sorting out and analyzing a large amount of data, enterprises can gain a deep understanding of the market, consumers, competitors and other aspects, and provide reliable basis for decision-making. Through real-time data analysis, enterprises can obtain market trends and changes in consumer demand in time, so as to quickly adjust strategies and improve the timeliness and accuracy of decision-making. Using the results of big data analysis, enterprises can transform market trends and consumer behaviors into quantifiable data indicators, providing an objective and scientific basis for decision-making. Through big data analysis, enterprises can evaluate the advantages and disadvantages and risks of different decision-making schemes, so as to choose the best scheme and improve the efficiency and effectiveness of decision-making.

#### 5.2 Suggestions on enterprise decision-making optimization in the era of big data

Enterprises should strengthen the ability of collecting, integrating and analyzing internal and external data, and establish a perfect data center and data analysis team to improve the timeliness and accuracy of data. At the same time, we should pay attention to the comprehensiveness and diversity of data in order to reflect the actual situation of the market and consumers more accurately. Enterprise decision-makers should have basic digital consciousness and data analysis ability, and be able to understand and use data analysis results to guide decision-making. Through training and self-study, decision makers can improve their ability of data analysis and decision-making. When using the analysis results of big data, enterprises should fully consider the limitations and errors of the data and avoid blindly following the data. At the same time, it is necessary to comprehensively analyze and evaluate the data analysis results in combination with the actual situation and industry characteristics in order to make more scientific and reasonable decisions. In the process of using big data for decision

optimization, enterprises should pay attention to data security and privacy protection. Establish a sound data security management system and privacy protection mechanism to ensure data security and compliance.

## 6 Conclusion

Big data technology has become an important tool for modern enterprise operation management and decision optimization. Through the application of big data technology, enterprises can better understand market trends and consumer demand, improve

decision-making efficiency and accuracy, reduce decision-making risks and improve production efficiency. In the future development, with the continuous progress of big data technology and the continuous expansion of application fields, we have reason to believe that big data will play a more important role in enterprise operation management and decision optimization. Therefore, modern enterprises should actively explore and apply big data technology to continuously improve their competitiveness and sustainable development capabilities.

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