

The Impact of Data Analysis on Business Operations Management and Decision Making

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Abstract. Against the background of the accelerated combination of intelligence and digital economy, the application of data analysis in enterprises is one of the key topics of today's research. Data analysis technology is widely applied in the operation and management processes of many enterprises. However, there are still gaps in research on the impact of data analysis on business operations management and decision-making. Therefore, this paper examines the relationship between the effect of data analysis on enterprise management, operations, and decision-making through a literature review. The study found that the use of data analysis technology played a positive role in the operation process of enterprises; Data analysis can significantly improve operational efficiency and enable enterprises to achieve better development. Improvements in decision-making accuracy and predictive capabilities have also enabled companies to enhance their market position and competitiveness. This paper also puts forward the core scenarios of the application of data analysis in the process of enterprise operation, such as process update, customer portrait management, etc., and the challenges encountered in the process of operation, such as data problems, etc., and the optimization methods of optimizing the link governance system and cultivating excellent talents.

Keywords: Data analysis; enterprise management operations; big data; influencing mechanism.

1. Introduction

In today's era of rapid development of science and technology, digitization has become the most important decision-making means in enterprise operation, and data has become one of the most core and important assets. With the rapid development of information technology, enterprises produce a large amount of data every day. This data comes from a wide range of sources and covers many aspects, such as market dynamics, internal operations, and so on. Gathering and analyzing various types of data has become a key part of the business process and development of enterprises [1].

Data analysis technology, as an important tool for extracting value from data, is changing the way companies operate and manage their businesses in an unprecedented situation. This technology generally uses appropriate statistical and analytical methods to analyze and sort out the vast amounts of data obtained in order to maximize the functionality of the data and identify its potential value [2]. Data analysis is not merely simple statistics and data collation, but rather the use of algorithmic models and advanced technical means to reveal hidden trends, risks, and patterns, thereby providing proactive guidance for company decision-making. It also provides direction and judgment for enterprises in management and operation and promotes the business promotion and auxiliary decision-making of enterprises [3].

In the process of operation and management of the company, data analysis can provide managers with an objective and correct scientific basis, so that decisions are no longer dependent on experience, but are more based on facts. This technology is also widely used in different industries and different scenarios, which makes various industries develop rapidly and steadily, and the production efficiency of enterprises rises rapidly. However, although data analysis has such an important role and potential, it still faces many challenges in the practical application of enterprises. Only by continuously improving data analysis strategies in applications and finding better development methods can people continue to leverage the advantages of data analysis in enterprise operations and management.

Based on a large number of literature review and data collection and analysis, this article will make an in-depth analysis from four aspects: the impact of data analysis on management and

operation, core application scenarios, challenges and optimized application strategies, aiming to reveal the key role of data analysis in the company's operation and how to achieve sustainable development in the market competition through high-quality analysis tools[4].

2. Impact Mechanism of Data Analysis on Management and Operation

2.1. Improving Operational Efficiency

Data analysis plays a key role in improving operational efficiency in enterprises. This technology can accurately find inefficient links by quantifying the time-consuming nodes of the process, the consumption of resources, and other indicators, such as the approval process taking too long, the steps are too complex, and too much inventory backlog leads to the occupation of a large amount of storage space. In the traditional decision management process, the use of manual data collection and analysis requires a lot of time, energy, material, and financial resources, making the accuracy of the analysis results cannot be reliably guaranteed. With the help of data analysis, enterprises can more intuitively see the impact of these problems and make decisions in a shorter time, so as to simplify the process, make full use of resources, and improve efficiency [5].

2.2. Enhancing Decision-Making Accuracy

Taking Amazon as an example, the platform has built a recommendation system by integrating and analyzing data such as customer browsing, purchasing, and search records. The system can accurately push products to customers based on their preferences and interests, greatly increasing user purchase rates and contributing to excellent sales figures. This also shows that enterprises can analyze quantitative laws and trends based on data, such as the positive correlation between the repurchase rate of customers in a region and the promotion frequency, and replace the judgment made from subjective experience with accurate data, to reduce the probability of biased decisions and make their decisions more scientific and reasonable. Similarly, Netflix has high user stickiness, which is precisely because it accurately pushes videos that users are interested in according to their viewing habits from the aspects of program type, viewing frequency, duration, time period, and so on, which greatly improves the number of users registered.

2.3. Strengthening forecasting ability

Building a prediction model based on historical data is the key factor for enterprises to achieve success in operational management. Based on the sales data of previous years, market demand fluctuations, and other factors, enterprises can build an accurate sales forecasting model to predict the future for a period of time, so as to arrange production and appropriate inventory. For some retail enterprises, before the important holidays, they can predict the demand in peak season through data analysis and prepare goods in advance to avoid the situation where too few goods are prepared, losing sales opportunities or overstocking inventory, leading to detention. It is an important means for manufacturing enterprises to steadily develop by predicting the capacity gap through the order data and reasonably adjusting the production plan to match production and demand. For some enterprises, the establishment of an early warning mechanism and the layout of resources and strategies in advance are also a part that cannot be ignored. Through the analysis of public opinion data, early warning of the sales problems faced by brands can help enterprises adjust strategies in time to minimize losses. The prediction of data analysis can enable enterprises to strengthen the management of customer relationships. Through the study of previous data, enterprises can identify the potential factors of customer churn risk and formulate targeted strategies to reduce customer churn [6]. Through data analysis and a prediction model, enterprises can accurately predict market trends and customer preferences, thereby enhancing their competitiveness in the market [7].

3. Core Application Scenarios of Data Analysis in Management Operations

3.1. Process Optimization

Data analysis plays a vital role in process optimization. In terms of production and operation, the manufacturing industry can monitor the operation status through equipment sensor data, predict possible faults, and carry out maintenance in advance to reduce the downtime rate of equipment. Taking Toyota Motor as an example, through the real-time monitoring of the production line, the enterprise immediately adjusts the production speed, optimizes the process, reduces redundant links, and greatly improves the overall efficiency when it finds that the production process cycle exceeds the specified time.

3.2. Customer Management

Building customer profiles is an important part of business operations. By collecting customers' consumption data, such as purchase frequency, preference categories, etc., and analyzing customers' behavior data, such as browsing trajectory, interaction records, etc., the user tags are outlined to realize hierarchical management. Enterprises can divide customers into different groups according to different consumption amounts and purchase frequency. Customize personalized marketing strategies for different customer groups to improve marketing effectiveness.

3.3. Service Optimization

After receiving numerous complaints about inaccurate location tracking, slow after-sales response, and long matching times, Didi taxi, a taxi platform in China, made real-time analysis of supply and demand data, improved the accuracy of positioning, added a number of after-sales service personnel, dynamically adjusted the taxi price, significantly increased the order matching rate at peak hours, and sharply increased customer utilization. Baidu Maps uses big data to analyze traffic conditions and user feedback, and alerts users in the app to avoid congested areas or choose faster routes, thereby improving the user experience. Improving service processes based on customer feedback data and service pain points is one of the major contributions of data analysis in helping enterprises improve their services.

4. Challenges and Countermeasures of Data Analysis in Application Management

4.1. Challenges of Data Analysis in Application Management

Data quality is also fundamental to data analysis in enterprises. If data quality cannot be guaranteed, it will lead to inaccurate analysis results, which in turn will affect decision-making and may cause losses to the enterprise. Data quality assurance includes accuracy, completeness, and consistency. Companies can ensure data quality by establishing data quality standards and implementing data cleansing measures. They can also add a link to detect and evaluate the data to ensure its reliability. Reliable data can improve the efficiency and accuracy of data analysis and lay a solid foundation for enterprise development [8].

In such a developed era of technology, the value of data is rising, and the problems of data security and privacy are also increasing. To make reasonable use of data analysis technology, it is first necessary to ensure data security. Companies must establish a comprehensive data management system and strictly adhere to data usage standards and procedures to prevent accidents. It is also an effective way for enterprises to adopt encryption technology, security audits, and other means to strengthen protection measures and ensure data security. In the process of using data, enterprises also need to abide by relevant laws and regulations and respect users' privacy. Only in this way can users trust the enterprise and realize the sustainable use of data [9].

Building a reliable data platform is helpful for the realization of data analysis. The development of a data platform can eliminate data islands and realize data sharing. It can not only improve the availability of data but also realize real-time analysis and decision support [9]. When building a data platform, choose stable and reliable database technologies and powerful analysis tools to ensure efficient operation [5]. For some companies, having a powerful data platform is the foundation and strong support for achieving efficient data management and deeper data mining.

4.2. Optimizing Strategies for Applying Data Analysis in Management Operations

To build a full link data governance system, support the innovation of activities related to data analysis, promote the development of emerging applications and technologies, and improve the overall intelligent level of society, the first step is to establish data collection standards. A clear definition of key indicators and acquisition frequency can improve the quality and accuracy of data. Regularly clean up data to ensure that it comes from a single source and is reliable. At the same time, AI technology can be used to detect abnormal data, such as repeated format errors and missing data. A sound data correction mechanism can be established to monitor data quality in real time. When data quality issues are detected, it can help enterprises make adjustments in time. A comprehensive data governance system can have higher accuracy in data analysis and can also improve the efficiency of enterprise operations. Clarifying data management responsibilities, usage permissions, and basic security requirements is the foundation for establishing a data governance system that ensures quality throughout the entire life cycle. This improves data quality and utilization, promotes data sharing, and supports decision-making [10].

The capabilities of data talent not only determine the depth and breadth of an enterprise's intelligent transformation, but also serve as users of technical tools, discoverers of data, and innovators of value [9]. In order to achieve the universality of data analysis, hierarchical training of talents is one of the effective methods to cultivate data-driven talents. The management should improve its ability to interpret the data. The business layer needs to master basic analysis tools, such as SQL Server, Excel, etc., and can simply process and analyze the data. The core positions should be equipped with data analysts to dig deeper into the potential value of data. Another method of cultivating talent is through school-enterprise cooperation, whereby enterprises can work with universities to establish data analysis laboratories to train highly skilled and knowledgeable data analysts, laying the foundation for personnel development within the enterprise. At the same time, a multi-functional team should be established within the enterprise, including business analysts, data engineers, algorithm designers, etc., to jointly improve the cooperation ability and form a compound talent team to better cope with the challenges encountered in the process of enterprise operation.

5. Conclusion

Through research, this paper finds that data analysis technology plays a positive role in enterprise operation management. It not only helps enterprises improve operational efficiency but also enhances the accuracy of decision-making and strengthens predictive capabilities. Furthermore, it plays an important role in maintaining customer relationships. Therefore, rigorous and accurate use of data analysis technology is conducive to the development of enterprises. Therefore, the rigorous and accurate use of data analysis technology is conducive to the development of enterprises. Data analysis also plays a crucial role in vital core application scenarios in enterprise operations, such as process optimization, customer management, and service optimization. It helps enterprises better adjust their operational processes and improve their service quality. However, enterprises also face many challenges when applying data analysis, such as data quality issues, data security issues, and data platform development issues. Only by finding the right standards and methods that match their operating concepts can enterprises maximize the efficiency of data analysis. By building a complete, full-link data governance system and cultivating data talents, enterprises can better cope with these challenges, give full play to the value of enterprises, improve the management and operation level,

and gain advantages in the market. The main contribution of this paper is to make an overall analysis and Research on the impact of data analysis technology on enterprise operation and management, which is conducive to the problems that enterprises need to pay attention to when considering the adoption of this technology and the areas for improvement, to achieve a more comprehensive development. Current research has only examined the positive effects of data analysis and has not sufficiently explored its negative effects. Furthermore, this research has mostly focused on short-term benefits, and further research is needed to assess its value for long-term strategies. Future research can explore the negative effects of data analysis and make further improvements on how to overcome the challenges faced by data analysis. Balancing the positive and negative impacts of data analysis to achieve a state of equilibrium, ultimately realizing synergistic optimization of business operational management efficiency and the advancement of data analysis.

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