

# The Application of BDT in Enterprise Strategic Management

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**Abstract:** With the rapid development of our country's economy, our country's major enterprises have also paid more and more attention to strategic management. Especially in the context of the current important support for the widespread application of BDT (big data technology), the data revolution has quietly begun, which not only helps to optimize the enterprise management environment to a large extent, but also further improves the management efficiency of the enterprise. This article expounds the related concepts of BDT, analyzes the shortcomings of BDT in the current strategic management of enterprises in our country, and finally puts forward an effective way to apply BDT to enterprise strategic management through related research. By using BDT, companies can improve the accuracy of strategy formulation, better improve their own management efficiency, and reduce the workload of employees. However, for some small and medium-sized enterprises, due to the lack of big data technical talents, it is difficult to give full play to this technological advantage, which affects the improvement of their own market competitiveness. Therefore, it is necessary to study the application of BDT in corporate strategic management, take effective measures to solve the current problems in corporate strategic management, improve the level of corporate strategic management, and make improvements for the sustainable development of the company. Based on the above analysis, we can know that making full use of big data-related technologies in corporate strategic management can effectively optimize the internal strategic management environment and efficiency of the enterprise.

**Keywords:** Enterprise, Strategic management, BDT, Enterprise optimization, Development trend

## 1. Introduction

In the era of rapid development of BDT, the current strategic management of enterprises has changed from the traditional model to the current network big data processing model [1, 2]. Enterprises have accumulated and saved a large amount of initial data, and adopted some related big data processing technologies to improve the level of corporate strategic management, thus applying BDT in corporate strategic management [3]. Secondly, BDT is a high-end technology based on massive data, which stores the stored data on the Internet. Therefore, companies must strengthen network security management to ensure the security of their own data [4, 5].

In the process of corporate strategic management, relatively speaking, due to the long-term influence of the traditional corporate management model, the corporate strategic management model is relatively simple [6]. On the one hand, due to the limited ability of the company's big data collectors to judge data and information, data collection before data processing sometimes leads to information errors, resulting in a lack of improvement in data processing [7]. Because at present, with the economic development of all social strata, the overall scale of the company's development is also expanding. In order to improve core competitiveness, large, medium and small enterprises must carry out comprehensive reforms to their own strategic management under the current large-scale development of BDT, and use all possible high-end technologies [8]. However, the business manager has not yet started from the overall development of the enterprise, the enterprise's ability to apply big data innovation is limited, and the overall level of the enterprise's strategic management cannot be improved [9].

Through the promotion of BDT, a new enterprise strategic management system can be further determined, and various departments of the enterprise can be divided into a balanced way. As the most powerful technical support of enterprises, BDT can dig out more valuable things for the development of

enterprises, and then can help managers make more scientific decisions [10]. In the era when the Internet is rapidly spreading, the requirements for the use of computer technology professionals in the company's strategic management have been significantly improved. With the development of major information technologies in today's society, great innovations have taken place, but it is still striving to carry out large-scale innovations with more traditional companies, and they have also pointed out their own development with the development of the times. However, the basic purpose and requirements of human and resource coordination in business management have not changed [11]. The advent of the big data era has provided help for enterprises' strategic decision-making, and has also put forward new requirements for enterprises to process information and adjust old management models. For traditional enterprises, strategic management and business connections should be closely integrated with technical work, and strategic management plans should be implemented in a more advanced way [12, 13].

## 2. Method

### 2.1. K-Means Algorithm Optimization

#### (1) Measurement of Distance

The measurement methods of middle distance are mainly divided into the following centralized methods:

Minkowski distance algorithm is shown in (1):

$$\text{dist}_{\text{mk}}(x_1^i, x_1^f) = (\sum_{u=1}^n |x_u^{(i)} - x_u^{(f)}|^p)^{\frac{1}{p}} \quad (1)$$

Minkowski's distance formula is shown in (2):

$$\text{dist}_{\text{mk}}(x_1^i, x_1^f) = \|x^i - x^f\|_2 = \sqrt{\sum_{u=1}^n |x_u^{(i)} - x_u^{(f)}|^2} \quad (2)$$

Distance algorithm formula is shown in (3):

$$\text{dist}_{\text{mk}}(x_1^i, x_1^f) = \|x^i - x^f\|_1 = \sum_{u=1}^n |x_u^{(i)} - x_u^{(f)}| \quad (3)$$

The formula of the distance measurement algorithm for disordered attributes is shown in (4)

VDM (Value Difference Metric):

$$\text{VDM}_p(x_u^{(i)}, x_u^{(f)}) = \sum_{z=1}^k \left| \frac{m_{u,x_u^{(i)},z}}{m_{u,x_u^{(i)}}} - \frac{m_{u,x_u^{(f)},z}}{m_{u,x_u^{(f)}}} \right|^p \quad (4)$$

### 2.2. Calculation Method of Classification Weight

The mean square error of the random classifier is:

$$\text{MSE}_r = \sum_t p(t)(1 - p(t))^2$$

$$w_i = \frac{1}{\text{MSE}_r}$$

$$\text{MSE}_{ij} = \frac{1}{|S|} \sum_{\{s \in S, t \in T\}} (1 - f_t^i(s))^2 \quad (5)$$

In the J-th sample of the data blocks is:

$$W_{ij} = \frac{1}{\text{MSE}_r + \text{MSE}_{ij} + \delta} \quad (6)$$

The total number of instances is calculated as follows:

$$\text{err} = \frac{1}{\text{winsize}} \sum_{i=1}^{\text{winsize}} I(S_j) \quad (7)$$

### 2.3. Increasing Relevant Big Data Technical Talents to Improve the Ability of Data Utilization

At present, one of the reasons why many companies do not apply BDT to their daily work is the lack

of professionals in this area. Therefore, companies should increase the recruitment of talents in this area, and through cooperation with professional human resources companies, find BDT professionals with professional capabilities from the society or schools, so as to greatly improve the company's competitiveness in BDT. In addition to the way companies take the initiative to find talents, they must also find ways to strengthen their own advantages, so that more job seekers can choose their own companies. Relevant departments of the company should cultivate acuity for information, and after a full analysis of big data, timely judge the potential market demand and the future development trend, and then can flexibly formulate scientific and reasonable plans for the development of the enterprise. For the collection of product data, in order to provide customers with a better and more comprehensive purchase reference, the relevant departments should collect all the information related to this product. At present, we have entered the era of big data, and all kinds of information emerge in an endless stream, flooding our lives. Enterprises will inevitably be disturbed by miscellaneous information when carrying out related management work. Therefore, enterprises must establish relevant professional departments to ensure a comprehensive and correct analysis of various information and further enhance their market position.

### 3. Model Establishment and Experimental Data Analysis

#### 3.1. Classical EM Algorithm Model Parameter Construction

For each data record in the data set D as x, the calculation of the probability data parameter model formula of  $h=1, \dots, k$ , belonging to the cluster is as follows:

$$w_h^t(x) = \frac{w_h^t \cdot f_h(x|\mu_h^t, \Sigma_h^t, k)}{\sum_{i=1}^k w_i^t \cdot f_i(x|\mu_i^t, \Sigma_i^t, k)} \quad (8)$$

The updated mixed model parameters are as follows:

$$= \sum_{x \in D} w_h^t(x), \mu_h^{t+1} = \frac{\sum_{x \in D} w_h^t(x) \cdot x}{\sum_{x \in D} w_h^t(x)} \quad (9)$$

$$\Sigma_h^{t+1} = \frac{\sum_{x \in D} w_h^t(x) (x - \mu_h^{t+1})(x - \mu_h^{t+1})^T}{\sum_{x \in D} w_h^t(x)} \quad (10)$$

#### 3.2. Application Research of Big Data Enterprise Economic Management Mining

Based on the number of times it appears in economic management and the number of companies in the language. The frequency is used as a reference, mainly to evaluate whether it has a good distinguishing ability. Which is:

$$w = \frac{n_{1,1}}{\sum n_{k,j}} \times \log \frac{|D|}{1 + |\{j:t.ed,\}|} \quad (11)$$

It is subjected to chi-square test. The formula is as follows:

$$X^2 = \frac{N(ad-bc)^2}{(a+c)(a+b)(b+d)(c+d)} \quad (12)$$

In the formula: N represents the total number; a represents the number that contains w but does not belong to the t category; b represents the number that contains w but does not belong to the t category; c does not contain the number that belongs to him, and d indicates that it neither contains w and does not belong to t class.

#### 3.3. Data Source

The data source of this experiment interviewed and surveyed 35 Chinese enterprises to collect data samples. Secondly, a questionnaire survey was used to issue questionnaire reports on the subject of "Corporate Strategic Management Data Survey" to 15 companies, and 15 copies were collected and 15 copies were effective reports. Finally, I learned from the survey that under the background of the big data era, if companies want to expand the market, they must find a new way. This is very important whether it is to change the data sample or conduct a feasibility study.

4. Evaluation Results

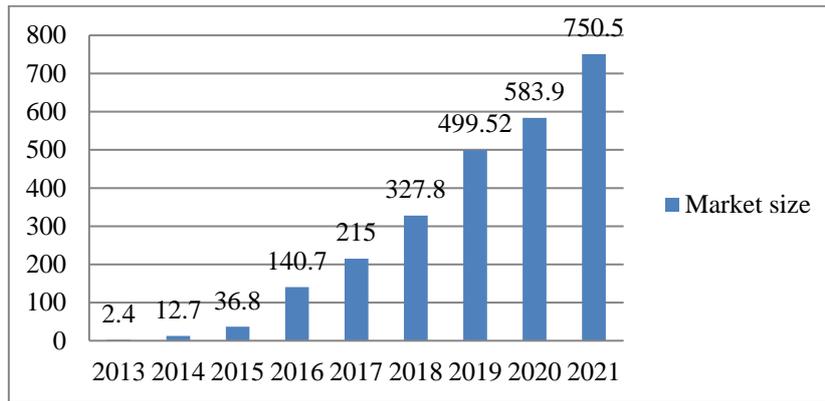


Figure 1: The scale analysis of the development of BDT in corporate strategic management from 2013 to 2021

From the above figure 1, we can see that before 2015, due to the immature development of BDT, the scale of market utilization was not large enough. Most of the small and medium-sized enterprises in my country were still very unfamiliar with BDT, and only less than 170% of them were unfamiliar with BDT. Companies recognize big data, and the benefits it brings to the scale of the development of the company's strategic management are far better than the previous manual situation. After 2015, the large-scale development of BDT in corporate strategic management. This is an increase of about 37% points compared to before 2015. The results show that after 2015, BDT has entered a rapid development. It is also due to the fact that more and more corporate strategic management models adopt big data methods, and it brings more convenience and better to enterprises.

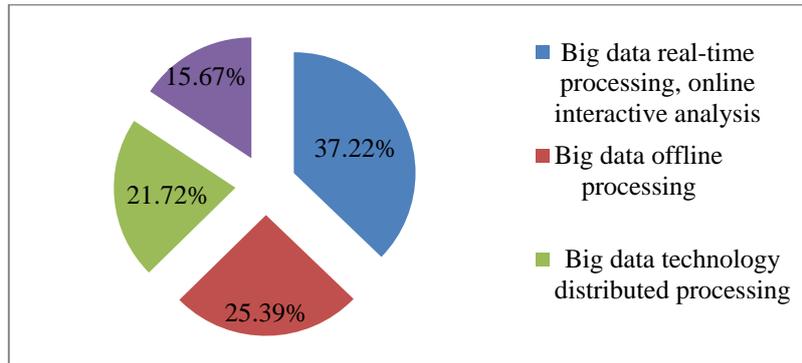


Figure 2: Related types of our country's BDT processing

As shown in Figure 2, there are many problems in the operation of big data, and different users have different methods. Analytical information management technology is a key element of customer experience management. It can provide actionable insights, automate the entire decision-making process, improve customer relationships, increase customer loyalty and interaction, and perform real-time analysis ∞, thereby providing an integrated and summarized historical customer Information, planning and execution of key customer experience decisions; through operational analysis, provide companies with personalized and relevant actions to improve business processes and applications.

Table 1: Analysis of the results of the performance reliability test of the application of big data in corporate strategic management

variable	Item	Total number of items	The coefficient of $\alpha$ after deletion	Coefficient of $Cro\ \alpha$
Financial Management	Corporate management performance			0.887
	FS1	0.352	0.852	
	FS2	0.639	0.732	
Market management	FS3	0.667	0.817	0.821
	FS4	0.732	0.759	
	FS5	0.660	0.931	

It can be seen from Table 1 that the Cro- $\alpha$  coefficient of all items is 0.835, which meets the standard of greater than 0.7. At the same time, the corrected correlation coefficient of all items under the corporate strategic management model is greater than 0.5. The  $\alpha$  coefficient after deleting any item is less than 0.940, that is, the overall reliability of the scale is not improved after deleting any item. To sum up, it can be seen that the analysis of the performance confidence test results of the application of big data in corporate strategic management has high internal consistency.

## 5. Conclusion

To sum up, establish a scientific and reliable strategic management plan, extract, summarize and innovate based on the characteristics of big data, so that managers can find various problems in the management, operation, and development of the current enterprise in a timely and fast manner. In addition, managers should also analyze the characteristics of the market, and use the mode of special forecasting and planning to evaluate, in order to improve the effectiveness of strategic management. With the help of BDT, companies can improve the accuracy of strategy formulation, better improve their own management efficiency, and reduce the workload of employees. But for some small and medium-sized enterprises, due to the lack of big data technical talents, it is difficult for them to take advantage of this technology, which affects their own market competitiveness.

## References

- [1] Lotesta J. *The myth of the business friendly economy: making neoliberal reforms in the worst state for business [J]. American Journal of Cultural Sociology*, 2019, 7(2):214-245.
- [2] Almonroeder T G, Tighe S M, Miller T M, et al. *The influence of fatigue on decision-making in athletes: a systematic review [J]. Sports Biomechanics*, 2020, 19(1):76-89.
- [3] Piatnytska G T, Shevchun M B. *The Logistic Processes in Trade: Systematizing Scientific Views and Assessing the Impact on Enterprise Management [J]. Business Inform*, 2020, 7(510):322-330.
- [4] Bondar-Podhurskaya O V, Khomenko I I, Karangwa C. *The Scientific-Methodological Aspects of Assessing the Efficiency of Innovative Enterprise Management in the Context of Achieving Sustainable Development Goals [J]. Business Inform*, 2020, 9(512):172-180.
- [5] Machuga R. *Factors determining the use of cloud computing in enterprise management in the EU (considering the type of economic activity) [J]. Problems and Perspectives in Management*, 2020, 18(3):93-105.
- [6] Batkovskiy M, Kravchuk P, Sudakov V, et al. *Development of Enterprise Management Tools Radio-electronic Industry in Their Conditions Diversifications [J]. Bulletin of Science and Practice*, 2020, 6(3):245-251.
- [7] Szmítka S. *THE IDEA OF FRANCHISE AS A MODERN CONCEPT OF ENTERPRISE MANAGEMENT: THE EXPERIENCE OF POLAND [J]. Journal of European Economy*, 2020, 19(Vol 19, No 2 (2020)):265-282.
- [8] Kostyukhin Y Y, Moseykin Y N. *Methodological provisions for the formation of an industrial enterprise management system based on the use of its potential [J]. RUDN Journal of Economics*, 2020, 28(1):110-122.
- [9] Chen Y T, Sun E W, Lin Y B. *Coherent quality management for big data systems: a dynamic approach for stochastic time consistency [J]. Annals of Operations Research*, 2019, 277(1):3-32.
- [10] Fang X, Luo J, Luo G, et al. *Big Data Transmission in Industrial IoT Systems With Small Capacitor Supplying Energy[J]. IEEE transactions on industrial informatics*, 2019, 15(4):2360-2371.
- [11] Gounaris C E, Grossmann I E. *A preface to the special issue on enterprise-wide optimization [J]. Optimization and Engineering*, 2019, 20(4):965-968.
- [12] Egorov M V, Polivanov G B. *Optimization of enterprise business processes on the basis of improvement of logistics [J]. Youth Science Forum Journal*, 2020, 1(2):49-55.
- [13] Ma Xinliang. *On how to strengthen corporate strategic management under the new economic environment [J] Marketing (Theory and Practice) 2020, (7): 176-177.*