

# Research on the Innovation Path of Enterprise Management Models in the Era of Big Data

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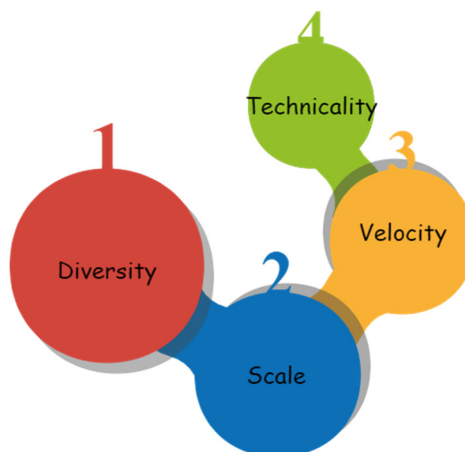
**Abstract.** In the context of the big data era, various new technologies have been widely applied, bringing new opportunities and challenges to business development. To develop steadily in fierce competition, enterprises must keep pace with the times and innovate based on traditional management models. Big data, characterized by its large volume, diverse types, fast processing speed, and low value density, has become a crucial engine for business development. It enables enterprises to precisely grasp market dynamics, optimize decision-making processes, and enhance operational efficiency, thereby bringing significant economic benefits and competitive advantages to businesses. However, facing the challenges of big data, enterprises also encounter numerous issues and difficulties, such as effectively collecting, processing, and analyzing massive data, ensuring data security and privacy, and cultivating talent with big data skills. Thus, enterprises need to adopt scientifically effective measures to fully leverage the advantages of big data technology, improve management quality, and lay a solid foundation for the healthy and sustainable development of businesses.

**Keywords:** Era of Big Data; Enterprise Management; Innovation Strategy.

## 1. Introduction

With the acceleration of globalization and the rapid development of the social economy, big data technology, with its unique charm, has been widely applied in various fields and achieved significant effects. For stable development in such a context, enterprises should innovate actively in step with the pace of the times. Internal leaders and relevant staff should take on this responsibility, comprehensively and deeply analyze the factors affecting business development, identify strengths and weaknesses, and thus formulate scientifically reasonable management strategies. Through effective management, enterprises can precisely control internal operations, avoid potential risks, seize market opportunities, and provide scientific, systematic recommendations for business development, promoting continuous improvement[1-4].

## 2. Characteristics of Big Data



**Figure 1.** Characteristics of Big Data

With the rapid development of information technology, the era of big data has gradually arrived. As a hallmark product of this era, big data is changing our lives, work, and even the entire social structure. In the field of business management, the introduction and application of big data have brought new opportunities for enterprises, as shown in Figure 1.

### **2.1. Diversity**

In practical applications, big data exhibits a rich and diverse structure, with various data types, leading to an increase in unstructured data. Unstructured data, such as text, images, audio, and video, due to their varied formats and complex content, pose significant challenges for data extraction and analysis. Traditional data processing methods struggle to effectively handle this vast amount of unstructured data. Thus, efficiently extracting and analyzing these data has become one of the core challenges of the big data era. To tackle this issue, enterprises need to adopt advanced data processing technologies and tools, such as natural language processing and machine learning, to perform deep mining and analysis of unstructured data, thereby providing robust data support for business decision-making.

### **2.2. Scale**

The key difference between big data and regular information lies in its vast storage capacity and information acquisition capabilities. On one hand, big data storage reaches ZB levels[5-6], far beyond the scope of traditional information processing. This immense volume of data provides new insights and analytical capabilities, enabling enterprises to understand the market, customers, and operations more comprehensively. On the other hand, big data sources continuously acquire information, meaning data can be updated in real-time, reflecting the latest market dynamics and customer needs. This real-time nature allows big data to continually grow and enhance its impact, providing more accurate and timely decision support for enterprises.

### **2.3. Velocity**

The rapid speed of data generation and flow is a core feature of the big data era. This high speed reflects the dynamism of the information age and places higher demands on data processing capabilities. During the circulation of big data, rich commercial value and decision-making information are embedded. However, due to the large volume and rapid update of data, many valuable pieces of information might be overlooked or lost in traditional analysis processes. Therefore, when acquiring and processing big data, enterprises must ensure efficiency and precision in their workflows. This means adopting advanced technologies and tools to process and analyze data more quickly while ensuring the accuracy and completeness of data to fully exploit and utilize the potential value of big data.

### **2.4. Value**

Big data, with its vast information storage and extensive resource coverage, brings high application value to various industries. However, this large data volume also presents a significant issue: the density of valuable data is low, and the content is sparse. This means that in the vast amounts of data, information crucial to business decisions is easily submerged and difficult to discover. The low value density characteristic makes the analysis of big data information particularly complex. To extract valuable information from massive datasets, related personnel need to invest more effort and use more advanced technologies and algorithms. They must possess deep data analysis skills, as well as keen insight and rich industry knowledge, to filter out genuinely useful information from the complex data, thereby better utilizing big data to support business decisions[7-8].

### 3. The Significance of Enterprise Management in the Era of Big Data

#### 3.1. Enhancing Core Competitiveness

With the acceleration of global economic integration, modern enterprises are increasingly blurring geographical boundaries in their quest to expand market share and pursue economic benefits. In the past, enterprises might have relied on local government support policies to aid their development, and traditional management models could cope with market changes. However, as our country's comprehensive national power has significantly improved, the social and economic structure is transitioning to high-quality development, bringing new challenges to businesses. Today, relying solely on government support is insufficient for enterprises to stand firm in a highly competitive market. Therefore, enterprises should seize opportunities, keep pace with the times, make reasonable use of big data technology, enhance their core competitiveness, clarify their long-term strengths and weaknesses, improve the quality of management work, and achieve stable development in fierce industry competition.

#### 3.2. Scientific Human Resource Management

In the context of the big data era, competition among modern enterprises is becoming increasingly fierce, and the core of competition is gradually focusing on talent, as shown in Figure 2. Having a high-quality, highly skilled workforce is key to continuous development and innovation for enterprises. Attracting and retaining talent has become a top priority in modern enterprise management. The human resources department, as an important internal division of the enterprise, should fully leverage its professional advantages in talent management and actively use big data technology to optimize talent management strategies. Through in-depth analysis of big data, the human resources department can accurately grasp basic employee information, career needs, and development potential, thereby providing strong support for the enterprise's talent recruitment, training, and motivation. Additionally, by using big data technology to understand basic employee information and needs, as well as the current market demand for talent and the requirements talent places on enterprises, the human resources department can use market data as a basis to conduct training within the enterprise, meeting the needs of employees and leaders as much as possible. This not only enhances employee loyalty but also improves the competitiveness of the enterprise.

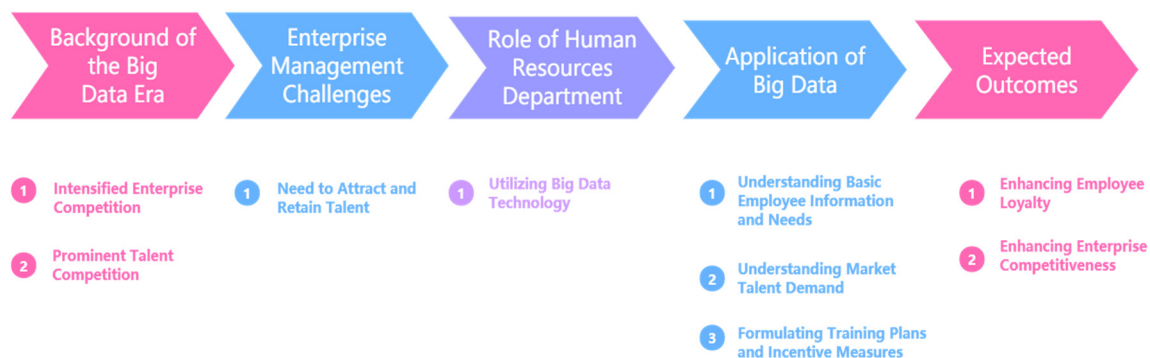


Figure 2. Conceptual Diagram of Enterprise Talent Management in the Era of Big Data

### 4. Challenges in Enterprise Management in the Big Data Environment

#### 4.1. Outdated Management Philosophies

In the context of the big data era, the continuous development of enterprises cannot be separated from efficient management and a firm commitment to data-driven thinking. However, many enterprises fail to establish a robust data mindset when facing diverse challenges, which limits their ability to leverage the potential of big data technologies[9-10]. Specifically, many businesses lack a

comprehensive plan for applying big data, leading to the wastage of data resources and inefficiencies. Moreover, managers and staff often lack systematic training and have an insufficient understanding of big data technologies, hindering their ability to fully utilize these advantages. Although some enterprises have made progress in informatization, they still face many challenges in using big data technologies to enhance management efficiency, such as data integration, data security, and technological updates.

#### **4.2. Poor Timeliness in Data Processing**

In this rapidly changing business environment, ensuring the speed of data updates is crucial. Whether optimizing internal operations or accurately grasping market trends, enterprises rely on the latest and most accurate data support. Therefore, enterprises must remain vigilant in processing information, ensuring the accuracy, symmetry, and timeliness of data. Enterprise staff must view issues from a developmental perspective, using the latest information as the basis for formulating management policies. Timeliness and accuracy are essential characteristics of data collection and processing, and only by grasping core data and applying scientific measures promptly can management ensure that their decisions align with current market developments. However, due to differences in enterprise scale, handling vast amounts of information often presents significant challenges, consuming substantial management costs and potentially impacting the timeliness of data processing.

### **5. Innovative Paths for Enterprise Management in the Big Data Era**

#### **5.1. Transforming Traditional Management Concepts**

With the advent of the big data era, its profound impact on the innovation of enterprise management models is undeniable. To gain more economic and social benefits in future market competition, enterprises need to embrace big data technology and fully utilize its strengths. Hence, internal managers should change their conventional thinking, conduct comprehensive research on the importance of big data, and integrate big data technology with enterprise management to fully realize its value, uses, and functions, thereby significantly enhancing the operability of managerial decision-making. Additionally, managers should also change their traditional thinking, guide internal staff correctly, and raise awareness about the use of big data technology, moving away from reliance on conventional thinking in their work. When all internal staff possess a big data mindset, the enterprise can better respond to market changes and achieve sustained and stable development.

#### **5.2. Enhancing the Timeliness of Information Processing**

In a rapidly changing market environment, enterprises must collect, process, and apply information in the shortest possible time to maintain competitiveness. Therefore, when innovating management models, enterprises should establish a data processing team composed of highly skilled and technically proficient talent. Additionally, the introduction of advanced software systems and technical tools is crucial to ensure efficient and accurate data processing workflows. However, some enterprises may not be able to form professional teams promptly due to financial constraints and may choose to collaborate with third parties to precisely target customers and achieve timely data processing. For instance, a certain online shopping platform, aiming to share resources, opts for a franchise model to develop strategies tailored to customer needs[11-12]. Cloud computing technology, a highlight in this context, facilitates preparations for franchisees and significantly reduces costs.

#### **5.3. Cultivating a Professional Talent Pool**

In today's rapidly evolving business environment, well-rounded professionals with robust expertise have become key to enterprise development. Talent not only needs solid marketing knowledge, outstanding data analysis capabilities, and comprehensive operational management qualities but also requires rich practical experience, adaptability, and profound professional competence. To meet these needs, enterprises should place high importance on the cultivation of such talent. Managers need to

meticulously oversee all internal operations and fully utilize generated data as a basis for decision-making, deeply understanding the enterprise's development goals and operational philosophies. Additionally, leveraging the advantages of big data technology to comprehensively handle various data and consider industry trends and actual needs before making informed decisions is crucial. When training data management personnel, simply increasing their professional knowledge and information skills is insufficient. It is also essential to enhance their professional ethics to cultivate more professional talent for enterprise management tasks.

#### 5.4. Ensuring Information Security

With the widespread application of big data technology, enterprise managers can significantly enhance work efficiency and quality, thereby securing a competitive edge in future contests. However, the use of any technology has its pros and cons; while big data brings convenience, it also poses threats to the security of business information. To ensure the security of business information, enterprises must implement a series of effective measures, as shown in Table 1. First, a strict access control system should be established, allowing only authorized personnel to access critical data, thus preventing the illegal acquisition of internal secrets and business information. Second, the application of cloud storage technology provides strong data security for enterprises. As data volumes grow, cloud storage becomes an ideal choice due to its high privacy and security, not only meeting the storage needs of vast amounts of corporate data but also ensuring the stability and security of enterprise information, providing a solid foundation for the continuous development of enterprises[13-15].

**Table 1.** Security Measures for Big Data Technology in Enterprise Management

Safety Measures	Details
Setting access permissions	Restrict access to sensitive data to authorized employees only
	Avoid internal confidential and commercial information leakage
Use cloud storage technology security measures	Provide high privacy and security data storage
	To meet the storage needs of large amounts of data
	Ensure the stability and security of enterprise information

#### 6. Conclusion

In summary, as big data technology rapidly evolves, our society and economy face various opportunities and challenges. In such an era, traditional enterprise management models can no longer meet current demands and are facing significant disruption. To maintain competitiveness and meet the requirements of the times, enterprises must actively apply big data technology and deeply innovate and optimize existing management models. The introduction of big data technology enables enterprises to more efficiently collect, integrate, analyze, and process massive amounts of data, providing scientific, strategic references for business decisions, making enterprise decisions more precise and effective. However, due to inherent factors, the enterprise management work currently undertaken still has various shortcomings. Internal managers and relevant staff should continually innovate according to industry development needs, so that the quality of information management in modern enterprises can be significantly enhanced, allowing for stable development amid fierce industry competition.

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