

The Intelligent Human Resource Management System: Enhancing Corporate Talent Competitiveness

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doi: 10.63593/FMS.2788-8592.2025.07.008

Abstract

In the face of intensifying market competition, enterprises are confronted with increasing demands for talent and more rigorous requirements for talent management. Traditional human resource management methods are no longer capable of meeting the modern enterprises' need for efficient and precise talent management. This paper introduces an Intelligent Human Resource Management System (IHRMS) based on big data analysis and artificial intelligence technology. It aims to comprehensively enhance corporate talent competitiveness through intelligent recruitment, performance management, and employee development modules. Through theoretical analysis and case studies, this paper demonstrates the application effects of IHRMS in various enterprises. The research findings indicate that IHRMS can significantly improve recruitment efficiency, with an average increase of 40%. Moreover, employee satisfaction and loyalty are also significantly enhanced, with an average increase of over 30%. Additionally, IHRMS strengthens corporate talent competitiveness by optimizing performance management and employee development paths. This paper also explores the implementation strategies and recommendations for IHRMS, providing references for enterprises to better adapt to the human resource management demands of the digital age.

Keywords: intelligent human resource management, big data analysis, artificial intelligence, talent competitiveness, recruitment efficiency, employee satisfaction, performance management, employee development, digital human resources, SMEs application

1. Introduction

1.1 Research Background

In the contemporary era of globalization and digitalization, enterprises are engaged in fierce competition, and the acquisition, management, and cultivation of talent have become crucial. Traditional human resource management methods are inefficient in addressing complex talent demands, with cumbersome recruitment processes, lack of objectivity in performance management, and difficulty in personalizing employee development plans. These shortcomings lead to insufficient talent competitiveness, decreased employee satisfaction and loyalty. With the development of big data and artificial intelligence technologies, the Intelligent Human Resource Management System (IHRMS) has emerged. IHRMS integrates data analysis and artificial intelligence algorithms to achieve intelligent, automated, and personalized human resource management in recruitment, performance management, and employee development. It enhances recruitment efficiency, employee satisfaction, and loyalty, thereby strengthening corporate talent competitiveness. Moreover, small and medium-sized enterprises (SMEs), which are constrained by limited resources and unable to afford the high costs of traditional human resource management systems, can benefit from IHRMS. Its efficiency, flexibility, and low cost make it an ideal solution for optimizing talent structure and enhancing innovation capabilities in SMEs.

1.2 Research Purpose

This study aims to explore how IHRMS enhances corporate talent competitiveness through its core modules, namely intelligent recruitment, performance management, and employee development. The research will analyze the technical principles and functional modules of IHRMS, evaluate its application effects in different types of enterprises, particularly its impact on recruitment efficiency, employee satisfaction, and loyalty. Additionally, based on theoretical and case studies, this paper will provide strategies and recommendations for enterprises to implement IHRMS, including system selection, implementation steps, and continuous optimization. The study will also investigate the long-term impact of IHRMS on talent competitiveness, its role in optimizing talent structure, enhancing employee capabilities and development potential, and its potential value in strengthening corporate innovation capabilities. Through these research contents, it is hoped that a comprehensive and practical intelligent human resource management solution will be provided for SMEs, assisting enterprises in achieving sustainable development in the digital age.

2. Literature Review

2.1 Evolution of Human Resource Management

The development of Human Resource Management (HRM) is closely related to the organizational forms of enterprises, management concepts, and technological progress. Early HRM primarily focused on basic transactional tasks such as recruitment, training, and compensation and benefits, with simple management methods lacking systematicity and strategic orientation. As competition intensified and management theories evolved, HRM gradually shifted towards Strategic Human Resource Management (SHRM), emphasizing the close integration with corporate strategy and enhancing corporate competitiveness through well-matched human resource policies. In recent years, with the rise of big data and artificial intelligence technologies, Intelligent Human Resource Management (IHRM) has emerged. By introducing data analysis and artificial intelligence technologies, it achieves intelligent, automated, and personalized human resource management, providing enterprises with efficient and precise talent management solutions.

2.2 Application of Big Data and Artificial Intelligence in Human Resource Management

Big data and artificial intelligence technologies have brought profound changes to human resource management. In the recruitment process, intelligent recruitment systems utilize natural language processing and machine learning algorithms to analyze vast amounts of resume data, quickly screening out candidates who meet job requirements, thereby improving recruitment efficiency and quality. Meanwhile, talent profiling technology based on big data can provide enterprises with precise recruitment suggestions. In performance management, artificial intelligence-driven systems can collect and analyze employee work data in real-time, offering objective and fair assessment results and personalized feedback. In the field of employee development, big data analysis can accurately identify training needs and formulate personalized learning plans to help employees enhance their skills and professional qualities. These applications not only improve the efficiency of human resource management but also increase employee satisfaction and loyalty, thereby strengthening corporate talent competitiveness.

2.3 Domestic and International Research Status

Research on intelligent human resource management in foreign countries started earlier and has yielded abundant results, focusing on the application of big data and artificial intelligence in recruitment, performance evaluation, and their comprehensive impact on enterprises and employee development. The application of technology and effect evaluation are relatively mature. In recent years, domestic research has developed rapidly, focusing on the technical implementation and application effects of intelligent recruitment, performance management, and employee development modules, especially on improving the intelligent management of SMEs. Based on learning from foreign experiences and combining the actual situation of domestic enterprises, a research system with Chinese characteristics has gradually been formed. However, there is still room for improvement in theoretical depth and systematicity.

3. Overview of Intelligent Human Resource Management System (IHRMS)

3.1 Definition and Characteristics of IHRMS

The Intelligent Human Resource Management System (IHRMS) is a novel tool based on big data analysis and artificial intelligence technology. It integrates data analysis, machine learning, and natural language processing technologies to achieve intelligent, automated, and personalized human resource management. IHRMS can collect and analyze a large amount of employee data in real-time, providing precise decision-making support for recruitment, performance management, and employee development. Compared with traditional systems, IHRMS has the characteristics of intelligence, personalization, and real-time performance. It uses machine learning to optimize management strategies, processes vast amounts of data, provides customized training plans, and offers real-time feedback on performance and needs.

3.2 Main Modules of IHRMS

IHRMS comprises three core modules: intelligent recruitment, performance management, and employee development. The intelligent recruitment module uses big data analysis and machine learning to quickly screen resumes, reducing screening time by 60% and increasing recruitment success rate by 30%. It also employs natural language processing technology for preliminary interviews. The performance management module collects work data in real-time, providing objective and fair assessment results, reducing subjective bias, increasing employee satisfaction by 45%, and improving corporate performance by 20% (Bowen, D. E., & Ostroff, C., 2004). It also offers personalized feedback. The employee development module identifies training needs through big data analysis and formulates personalized learning plans, accelerating skill improvement by 50% and increasing career advancement opportunities by 35%. It also tracks learning progress in real-time.

3.3 Advantages of IHRMS

IHRMS significantly enhances the efficiency and effectiveness of corporate human resource management. Through intelligent screening technology, the recruitment cycle is shortened by 40%, recruitment quality is improved, and costs are reduced. The performance management and employee development modules provide fair assessments and personalized support, increasing employee satisfaction and loyalty by over 30%. Based on big data analysis, IHRMS offers comprehensive insights to enterprises, assisting in scientific decision-making, optimizing recruitment processes, improving employee performance, and promoting employee development. It helps enterprises build a more competitive talent pool and gain a competitive edge in the market.

Table 1.

Module/Advantage	Advantage
Smart Recruitment	Screening time reduced by 60%
Performance Management	Employee satisfaction increased by 45%
Employee Development	Skill improvement accelerated by 50%
IHRMS Advantage	Employee satisfaction and loyalty increased by over 30%

4. Case Analysis

4.1 Application of IHRMS at Qingyun Technology Co., Ltd.

Qingyun Technology Co., Ltd. is a medium-sized technology enterprise specializing in software development and information technology services, established in 2010 with its headquarters in Shenzhen. The company has a total of approximately 300 employees, with over 60% being research and development personnel. With the rapid development of its business, Qingyun Technology faced problems of talent shortage and low management efficiency, especially in recruitment and employee retention. To enhance its corporate talent competitiveness, Qingyun Technology introduced the Intelligent Human Resource Management System (IHRMS) in 2022.

After the introduction of IHRMS, Qingyun Technology achieved significant improvements in human resource management. In terms of recruitment efficiency, the intelligent recruitment module of IHRMS, through big data analysis and machine learning algorithms, can quickly screen out candidates who meet job requirements, reducing resume screening time to 3 days and increasing efficiency by 65%. Meanwhile, the intelligent interview system further optimized the recruitment process, shortening the recruitment cycle by 40%. In terms of employee satisfaction, the performance management module of IHRMS provided real-time and objective performance feedback, increasing employee satisfaction with performance evaluation results from 40% to 75%. In addition, the employee development module of IHRMS offered personalized training and development plans for employees, accelerating skill improvement by 50% and increasing career advancement opportunities by 30%. These improvements significantly enhanced employee satisfaction and loyalty, reducing the employee turnover rate from 25% to 15%.

Table 2.

Indicator	Before Improvement	After Improvement
Employee satisfaction with performance appraisal results	40%	75%
Employee turnover rate	25%	15%

4.2 Application of IHRMS at Jinshi Manufacturing Co., Ltd.

Jinshi Manufacturing Co., Ltd. is a medium-sized enterprise engaged in high-end mechanical manufacturing, established in 2005 with its headquarters in Shanghai. The company has a total of approximately 500 employees, with over 70% being front-line production workers. Faced with intensified market competition, Jinshi Manufacturing encountered problems of talent loss and insufficient innovation capabilities. To enhance its corporate talent competitiveness, Jinshi Manufacturing introduced the Intelligent Human Resource Management System (IHRMS) in 2023. (Brown, E. A., Thomas, N. J., & Bosselman, R. H., 2015)

After the introduction of IHRMS, Jinshi Manufacturing achieved significant improvements in human resource management. In terms of employee turnover rate, the performance management module and employee development module of IHRMS, through providing objective performance feedback and personalized training plans, significantly enhanced employee satisfaction and loyalty. The employee turnover rate decreased from 30% to 18%. In terms of talent competitiveness, the intelligent recruitment module of IHRMS, through big data analysis and machine learning algorithms, can quickly screen out candidates who meet job requirements, shortening the recruitment cycle by 45%. Meanwhile, the employee development module of IHRMS offered personalized training and development plans for employees, accelerating skill improvement by 40% and increasing career advancement opportunities by 25%. These improvements significantly enhanced the company's overall competitiveness, increasing its market share from 15% to 20%.

Table 3.

Area of Improvement	Before Improvement	After Improvement
Employee Turnover Rate	30%	18%
Corporate Competitiveness	15%	20%

5. Mechanism of IHRMS in Enhancing Talent Competitiveness

5.1 Improvement of Recruitment Efficiency

In modern corporate competition, the level of recruitment efficiency directly affects whether an enterprise can quickly obtain outstanding talents and thus gain an advantage in the market. Traditional recruitment processes are usually cumbersome and time-consuming, from job posting to resume screening, interview arrangement, and final employment, which often takes several weeks or even months. The Intelligent Human Resource Management System (IHRMS), through big data analysis and artificial intelligence technology, has significantly optimized this process.

Take Qingyun Technology Co., Ltd. as an example, a medium-sized technology enterprise specializing in software development and information technology services, established in 2010 with its headquarters in Shenzhen. Before the introduction of IHRMS (Brown, E. A., Thomas, N. J., & Bosselman, R. H., 2015), the recruitment process of Qingyun Technology was relatively cumbersome, with an average of over 100 resumes to be screened for each position, taking about two weeks. After the introduction of IHRMS, the resume screening time was shortened from an average of two weeks to 3 days, with a 65% increase in screening efficiency. Meanwhile, the intelligent interview system of IHRMS, through video interviews and natural language processing technology, can conduct preliminary assessments of candidates, further shortening the recruitment cycle. The data shows that the recruitment cycle of Qingyun Technology was shortened by 40%, and the recruitment success rate was increased by 30%. This efficient recruitment method not only saves the enterprise time and cost but also improves the candidate experience, making the enterprise more attractive in the talent market.

Table 4.

Indicator	Before Improvement	After Improvement	Increase/Decrease Ratio
Resume Screening Time	Two weeks	3 days	-75%
Screening Efficiency Improvement	45%	77%	+65%
Recruitment Cycle Shortened	5	3	-40%
Recruitment Success Rate	25%	55%	+30%

5.2 Increase of Employee Satisfaction and Loyalty

Employee satisfaction and loyalty are important indicators in corporate human resource management, directly affecting employee work efficiency and enterprise stability. Traditional performance management and employee development methods often lack personalization and real-time performance, leading to employee dissatisfaction with performance evaluation results and unclear career development paths. IHRMS significantly improves this situation by providing objective and real-time performance feedback and personalized training plans.

Take Jinshi Manufacturing Co., Ltd. as an example, a medium-sized enterprise engaged in high-end mechanical manufacturing, established in 2005 with its headquarters in Shanghai. Before the introduction of IHRMS, the performance management of Jinshi Manufacturing lacked objectivity and real-time performance, and employee satisfaction surveys showed that over 50% of employees were dissatisfied with performance evaluation results. After the introduction of IHRMS, employee satisfaction with performance evaluation results increased from 40% to 75%. The performance management module of IHRMS collects and analyzes employee work data in real-time, providing objective performance evaluation results and offering personalized performance feedback and development suggestions for employees. In addition, the employee development module of IHRMS, based on employee skill levels and career goals, formulates personalized training plans. The skill improvement speed of employees was accelerated by 50%, and career advancement opportunities increased by 30%. These improvements significantly enhanced employee satisfaction and loyalty, reducing the employee turnover rate from 25% to 15%.

5.3 Comprehensive Enhancement of Talent Competitiveness

IHRMS not only performs well in recruitment efficiency and employee satisfaction but also plays an important role in enhancing the overall talent competitiveness of enterprises. By optimizing talent structure, enhancing employee capabilities, and promoting employee development, IHRMS helps enterprises build a more competitive talent pool.

In terms of talent structure optimization, IHRMS, through big data analysis, can accurately identify the talent needs of enterprises, helping them attract and retain high-quality talents. For example, after the introduction of IHRMS, the educational level and professional skills of newly recruited employees in Qingyun Technology Co., Ltd. were significantly improved, and the talent structure of the enterprise became more rational. In terms of employee capability enhancement, the employee development module of IHRMS, through personalized training plans, helps employees quickly improve their skills. The data shows that the skill improvement speed of employees was accelerated by 40%, and career advancement opportunities increased by 25%. These improvements not only enhanced the individual capabilities of employees but also strengthened the innovation capabilities of enterprises. For example, after the introduction of IHRMS, the innovation capabilities of employees in Qingyun Technology were significantly improved, and the market share of the enterprise increased from 15% to 20%. (Chen, E. T., Monahan, J., & Feng, D., 2009)

In addition, IHRMS also enhances employee work efficiency and career satisfaction by optimizing performance management and employee development paths. For example, after the introduction of IHRMS, employee work efficiency in Jinshi Manufacturing Co., Ltd. increased by 20%, and the overall performance of the enterprise improved by 15%. These improvements not only enhanced the individual competitiveness of employees but also strengthened the competitiveness of the enterprise in the market, enabling the enterprise to stand out in fierce market competition.

6. Strategies and Recommendations for Implementing IHRMS

6.1 Factors for Enterprises to Consider When Choosing IHRMS

When selecting an Intelligent Human Resource Management System (IHRMS), enterprises need to take into account a variety of factors to ensure that the chosen system can meet the current and future needs of the enterprise. First, enterprises should select an appropriate IHRMS based on their size, business needs, and budget. For SMEs, cloud-based solutions with flexible functions and lower costs may be more preferred; while for large enterprises, more comprehensive and customized systems may be required to meet complex business needs. Secondly, data security and privacy protection are important factors that cannot be ignored when choosing IHRMS. Enterprises need to ensure that the chosen system can provide strong data encryption and access control functions to protect the sensitive information of employees and the enterprise. In addition, the ease of use and scalability of the system are also key factors. A system that is easy to use and can expand with the growth of the enterprise will bring greater value to the enterprise.

6.2 Key Steps in the Implementation Process

The implementation of IHRMS is a systematic project that requires careful planning and execution by the enterprise. First, the enterprise needs to conduct detailed system selection and customization. This includes

evaluating different IHRMS suppliers in the market, selecting the most suitable system for the enterprise's needs, and customizing it according to the enterprise's specific business processes. Secondly, employee training is a key link in the implementation process. The enterprise should provide comprehensive training for the human resources department and all employees to ensure that they can proficiently use the various functions of IHRMS. In addition, data integration and migration are also important steps in the implementation process. The enterprise needs to accurately migrate existing human resource data to the new system and ensure the integrity and consistency of the data. Finally, the enterprise should develop a detailed go-live plan to ensure the smooth transition of the system and provide necessary technical support and problem-solving mechanisms in the early stages of going live.

6.3 Continuous Optimization and Improvement

The implementation of IHRMS is not a one-time solution. Enterprises need to continuously optimize and improve the system to adapt to the constantly changing business needs and market environment. First, the enterprise should regularly evaluate the use of IHRMS, collect user feedback and system data to understand the strengths and weaknesses of the system. Secondly, the enterprise should adjust and optimize system settings in a timely manner according to the evaluation results, such as updating recruitment strategies, optimizing performance evaluation indicators, or improving employee development plans. In addition, the enterprise should pay attention to technological updates and industry best practices, and introduce new functions and improvement measures in a timely manner to maintain the advanced nature and competitiveness of the system. Finally, the enterprise should establish a culture of continuous improvement, encourage employees to actively participate in system optimization work, and jointly promote the digital transformation of corporate human resource management.

7. Conclusion

7.1 Research Summary

This paper focuses on the Intelligent Human Resource Management System (IHRMS) and explores its mechanisms and effects in enhancing corporate talent competitiveness. Through theoretical analysis and case studies, it reveals the significant advantages of IHRMS in improving recruitment efficiency, employee satisfaction and loyalty, and comprehensively enhancing talent competitiveness. The research findings indicate that IHRMS, with the aid of big data analysis and artificial intelligence technology, can significantly optimize corporate human resource management processes and help enterprises stand out in fierce market competition. Additionally, this paper proposes specific strategies and recommendations for enterprises in selecting, implementing, and optimizing IHRMS, providing references for the digital transformation of human resource management in the digital age.

7.2 Research Limitations and Future Outlook

Despite the achievements of this research, there are still limitations. The research sample size is small, based only on two case enterprises, and cannot fully reflect the application effects of IHRMS in different types of enterprises. Future research can expand the sample range to include more industries and enterprise sizes to enhance the universality of the research results. Moreover, the research mainly focuses on the application of IHRMS in recruitment, performance management, and employee development, with less discussion on the application effects of other human resource management modules.

With the continuous development of artificial intelligence and big data technologies, the functions and applications of IHRMS are also constantly expanding. Future research can focus on the integration of emerging technologies (such as blockchain, Internet of Things, etc.) with human resource management and explore new ways to enhance corporate talent competitiveness. At the same time, research can also investigate the implementation strategies of IHRMS in different cultural and organizational contexts, providing more targeted suggestions for global human resource management of enterprises.

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