

Innovation Model of Grassroots Staff Performance Appraisal in Big Data Environment

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Abstract: With the rapid development of big data technology, new requirements and challenges have emerged for the performance evaluation methods of grassroots employees. This study focuses on the application of big data in performance assessment, providing a detailed analysis of the current methods for evaluating grassroots employee performance and the issues that exist within these methods. It reveals the major challenges that performance evaluation faces in a big data environment. Based on this analysis, the paper proposes an innovative performance evaluation model designed to fully leverage the advantages of big data technology to enhance the fairness and accuracy of assessments. Additionally, it outlines an implementation plan and assessment methods for the new model and presents a feasibility analysis. Ultimately, this research aims to provide a more scientific and reasonable solution for the performance evaluation of grassroots employees, adapting to the developmental needs of the digital age.

Keywords: Big Data Technology; Employee Performance Evaluation; Innovative Models; Evaluation Methods; Fairness; Accuracy.

1. Introduction

In the environment of big data, the performance appraisal of grassroots employees is faced with great opportunities and challenges. The traditional appraisal mode mainly relies on subjective evaluation and lacks data support and transparency, which leads to the lack of fairness and accuracy of performance appraisal. Therefore, through the introduction of big data analysis technology and the establishment of data-driven performance appraisal innovation model, the limitations of traditional methods can be effectively overcome.

The core of this model lies in data collection and analysis, including employees' work behavior data, performance data, customer feedback, colleague evaluation and other dimensions, forming a 360-degree evaluation system. For example, automated tools are used to monitor employees' on-duty time, workload and completion quality in real time, and to generate assessment reports. In this process, the use of data mining algorithms (such as random forest, support vector machine) to quantify the performance of employees, to achieve a comprehensive assessment of individuals and teams.

The key performance indicator (KPI) system is introduced to combine qualitative indicators with quantitative indicators to ensure scientific and reasonable assessment standards. Common KPIs include task completion rate, customer satisfaction, new customer development, etc. A number of indicators are synthesized by weighted method to obtain employee performance scores. In the specific implementation, different weights can be set, such as task completion rate accounted for 40%, customer satisfaction accounted for 30%, team cooperation accounted for 30%, reflecting the characteristics of multi-dimensional assessment.

In the assessment feedback link, data visualization tools are used to show employees the gap between their performance and the degree of target achievement, and provide accurate improvement suggestions. Real-time data monitoring system helps managers to know the status of employees in a timely manner, encourages active communication, and improves

management effect. At the same time, predictive analysis based on historical data supports goal setting and talent training to ensure the continuous optimization of performance appraisal.

The performance appraisal model based on big data can enhance the adaptability and adaptability of the organization, and improve the sense of belonging and enthusiasm of employees. In addition, with the help of artificial intelligence technology to achieve intelligent performance appraisal, predict employee turnover risk, facilitate the formulation of targeted talent retention strategies. In the future, this model will continue to evolve, and further integrate machine learning and blockchain technology to ensure the authenticity and security of data, and realize the automation and transparency of performance appraisal.

To sum up, the innovation mode of performance appraisal for grass-roots employees in the big data environment not only improves the scientific-ness and accuracy of appraisal by integrating multidimensional data and advanced technology, but also promotes the healthy development of organizational behavior and provides strong support for enterprises to gain advantages in competition.

2. Overview of Big Data Technology

2.1. Development of Big Data Technology

When studying the innovative model of performance appraisal of grassroots employees under the big data environment, we focus on the effectiveness of the application of data governance framework. First of all, we established a set of evaluation criteria for data governance framework in big data environment, which covers four dimensions: data quality, data management, data application and data security. In this research stage, more than 1 million employee performance data sets were collected and processed, and pattern recognition and correlation analysis were carried out by machine learning algorithm. Following the data pre-processing process, repetitive and incomplete records were eliminated to ensure the data quality and accuracy of the

analysis.

The analysis algorithm selected decision trees and random forest models to deal with nonlinear relationships and improve the robustness of the results. The hyperparameters of the model are tuned in detail, the depth of the decision tree is limited to 10, and the random forest contains 100 trees. This parameter combination ensures optimal prediction performance through cross-validation. Based on the output of the comprehensive evaluation algorithm and model, we established a data governance framework in the big data environment, and embedded it into the daily performance appraisal process of employees to improve the fairness and transparency of the assessment.

In order to verify the effectiveness of the data governance framework, the experimental design included a control group, which still adopted the traditional employee assessment mechanism, and an experimental group, which implemented the data governance framework in the big data environment. Through a six-month experiment, the performance data of the two groups of grass-roots employees were collected, and the differences before and after the framework was used were compared and analyzed. The results showed that the performance of the grass-roots employees in the experimental group improved significantly, and 95% of them reported that the objectivity of assessment and personal motivation had improved. At the same time, the data governance framework also promoted the integration and utilization of effective data, providing real-time and accurate data support for grass-roots management decisions.

With the help of advanced data mining technology and complex network analysis tools, we have deeply analyzed the complex relationship between grass-roots staff performance and daily work patterns, and established a number of key performance indicators with predictive value. In addition, in order to further explore the adjustment and optimization potential of the data governance framework, we constructed a multiple regression model and a neural network model to fit and predict employee performance, and experiments show that the latter has superior performance when dealing with large data sets.

The research not only strengthens the guiding role of the theoretical framework for practical application, but also provides quantitative analysis tools and innovative ideas for the practice of performance appraisal under the environment of big data, hoping to provide useful references for the research and management practice in related fields. The research results have been published in some cutting-edge academic journals, and has been widely concerned by the industry and academia.

2.2. Application of Big Data in Performance Appraisal

In the environment of big data, the performance appraisal model of grassroots employees is undergoing a profound change. By building a new framework of performance appraisal and applying big data technology to employee performance appraisal, the work efficiency and potential value of employees can be revealed more accurately. The performance appraisal process begins with the establishment of appraisal standards to ensure the scientificity and impartiality of the appraisal system.

The process of performance appraisal aims to eliminate the traditional evaluation methods that only rely on subjective feelings, and introduce quantitative data as an important

evaluation tool. In the specific operation, the employee performance data is first collected through multi-source data platforms such as attendance management system and sales data system. Secondly, a series of parallel tasks are started in the selection of decision nodes where big data technology is applied, such as "yes" answer: data cleaning to filter out irrelevant or wrong data, data analysis and processing to convert into useful information, and then performance patterns are mined by algorithms to predict employees' future performance. Optimize the accuracy and objectivity of the final evaluation results based on the big data performance appraisal flow chart notes.

Each performance indicator is further refined into specific data sources and analysis methods, and assigned its own weight to form a big data performance assessment indicator table. For example, personal performance indicators rely on the sales data system, using data statistics method, accounting for 25% of the total score of performance assessment, and set baseline values and target values, and so on, covering many aspects including attendance, discipline and attitude, professional technology and ability. The actual completion of each indicator will be calculated and compared with the target value, and the assessment results will be evaluated with objective data.

In addition, the feedback link of the performance evaluation results covers the discussion of the employee's motivation and development potential, which not only provides assistance for the employee's personal career planning, but also provides data support for the organization's talent management and optimization. If the performance highlights are revealed by big data, it may promote the rapid growth of employees and the collaborative development between departments. To the end of the process, the feedback results are also considered to be the starting point of a new round of assessment preparation, marking the closed-loop operation of the data-driven performance management system.

To sum up, the integration of big data technology into the performance appraisal of grassroots employees is not only a simple application of data collection and analysis, but through a comprehensive reform of the old system structure, integration and optimization of the evaluation process, to improve the operational efficiency of the entire organization and the performance level of employees, and ultimately promote the long-term competitiveness of the enterprise.

3. Performance Appraisal Status of Grass-roots Staff

3.1. Analysis of Current Assessment Methods

In the context of big data, the innovative mode of performance appraisal for grassroots employees involves real-time analysis and application of multi-dimensional data. Compared with traditional methods, the new mode provides a more accurate, dynamic and personalized assessment method. When comparing the current performance appraisal methods, the "Comparison Table of Current performance appraisal Methods" reveals significant differences between the two methods in terms of indicator quantification, result transparency, and technical support. For example, the evaluation of "personal performance" in the traditional appraisal relies on annual sales and the number of tasks completed, while in the big data environment, real-time sales data analysis is adopted, which can effectively capture the

real-time market dynamics and adjust employees' goals in time.

Table 1. Big Data performance appraisal indicator table

Performance indicators	Data sources	Analytical method	Indicator Weights	Baseline values	Target value	Actual completion	Evaluation
Personal performance	Sales data system	Data statistics	25%	100 orders	150 singles	120 singles	Hit the mark
Attendance	Attendance management system	Time series analysis	20%	95%	100%	98%	overage
Discipline and attitude	Employee monitoring system	Sentiment analysis	15%	Good	Excellent	Good	Basically qualified
Professional skills and abilities	Skills assessment System	Technical Ability Scale scoring	15%	60 points	80 points	70 points	Hitting the mark
Personal learning and innovation ability	Online learning platform	Analysis of learning progress and test scores	10%	70%	90%	85%	Achieving Achievement
Teamwork	Project management software	Social network analysis	10%	Good	Excellent	Good	Basically qualified
Data analysis ability	Statistical software to complete projects	ROI analysis	5%	10%	25%	20%	Reach the target

Performance appraisals are also shifting from direct supervisor reviews and peer votes to behavioral data patterns in the evaluation of "discipline and attitude." This data-driven approach objectively reflects the daily performance of employees, and enhances the interactive and immediate feedback capabilities of the appraisal through an online evaluation system. In terms of technical support, the method in the big data environment goes far beyond the paper forms of traditional data and backward IT systems, and turns to the cloud platform, big data analysis tools and mobile technology to realize the automation and intelligence of the assessment process.

At the same time, another core advantage of performance appraisal in the big data environment is its application of appraisal results and the frequency of performance feedback. Performance appraisal results are no longer limited to annual salary increases and bonuses, but combine continuous incentives with personalized development paths, using real-time performance feedback platforms and data-driven iterative interviews to motivate grassroots employees to continuously optimize their performance. In addition, the transparency and fairness of the assessment results have also been greatly improved, and the results are made public in real time, eliminating the bias of subjective judgment that may have existed in the past.

Through the in-depth analysis of performance appraisal methods, it shows that big data technology plays a key role in improving the quality, transparency and dynamic adjustment ability of employee performance appraisal. When discussing the current situation of the performance appraisal of grassroots employees, we must recognize that the above appraisal mode has unmatched advantages over traditional methods in terms of individual expertise and ability, team cooperation ability, customer satisfaction and employee satisfaction, etc. It provides a new perspective and methodology for the performance management and talent training strategies of

grass-roots employees. In the near future, the performance appraisal mode of grassroots employees under the environment of big data will gradually become the mainstream, bringing more accurate and efficient human resource management tools for enterprises.

3.2. Existing Problems and Challenges

Under the current background of big data, the performance appraisal of grass-roots employees is faced with various problems and challenges, which are specifically sorted out and analyzed in the List of Performance Appraisal Problems and Challenges. The problem of data quality is particularly prominent, and the inconsistency of data leads to the unfairness and inefficiency of performance appraisal. This is mainly due to the inconsistency of data standards adopted by different departments, which leads to the reduction of data accuracy and seriously affects the results of performance appraisal. In addition, the phenomenon of missing data is widespread, and the absence of key performance data leads to the lack of assessment basis, which in turn affects the integrity of data. Current solutions focus on implementing data governance and establishing a sound data collection system, attempting to improve data quality and optimize assessment processes through these measures.

Faced with the challenge of data analysis ability, grass-roots employees generally lack advanced data analysis skills, resulting in low efficiency of data analysis. The analysis of current situation shows that employees lack the ability of data analysis and cannot effectively use complex analysis tools. In response to this challenge, it is suggested to carry out data analysis training and workshops to improve employees' data analysis skills. At the same time, professional data analysts should be introduced to improve the accuracy of data interpretation, so that the analysis results can be correctly applied to practical work.

Table 2. Comparison of current performance appraisal methods

Appraisal Method	Traditional method Features	Method characteristics in big data environment
Personal Performance	Annual sales, number of tasks completed	Real-time sales data analysis, dynamic task completion
Attendance	The attendance machine records the number of days attended	GPS clock system, mobile app attendance records
Discipline and attitude	Reviews by direct superiors and votes by colleagues	Employee behavior data pattern analysis, online evaluation system
Professional skills and abilities	Qualifications and years of service	Online training completion degree, skill assessment APP
Individual learning and innovation	Study course completion, patents, and paper publication	Electronic library reading records, frequency of online seminar participation
Employee satisfaction	Annual questionnaire	Social media sentiment analysis, instant feedback systems
Performance feedback	Year-end performance interview	Real-time performance feedback platform, data-driven iterative interviews
Innovation Contribution	Number of new product proposals and adoption of improvement suggestions	Data analysis-driven innovation index, online innovation lab participation
Ability to work in a team	Team project success count, leadership evaluation	Use efficiency of network collaboration software, success rate of cross-departmental cloud delivery project
Customer satisfaction	Customer service investigation, complaint handling speed	Customer interaction data analysis, real-time monitoring of service quality
Adaptability and flexibility	Response time to change, efficiency of project transformation	Ability to analyze adaptability to real-time market trends and quickly deploy new strategies
Data-driven decision making	Decision making based on experience	Decision support systems based on data mining and predictive models
Quantification of performance appraisal indicators	Qualitative description is more, the target is vague	Quantitative indicators and data-driven goals are clear
Application of assessment results	Annual salary adjustment and bonus payment	Continuous incentive measures, personalized development path
Transparency and fairness of performance appraisal results	Limited employee understanding of results and possible subjective judgment	Results Real-time disclosure and data analysis support impartiality
Technical support and system input	Based on paper forms or legacy IT systems	Cloud platforms, big data analytics tools, mobile technologies
Training and development	Annual staff training and execution as needed	Data-driven personalized development plan, real-time online training
Potential and strength identification	5. Superior evaluation, personal statement	Leading indicator analysis, potential development system

Technical challenges cannot be ignored either. The lack of use of cloud computing and information technology has limited the improvement of the level of technology application. The basic staff's lack of mastery of these technologies leads to the inadequate use of technologies, which reduces the efficiency and accuracy of performance appraisal. In order to cope with these challenges, IT is necessary to speed up the pace of information technology training and application, update and maintain IT infrastructure simultaneously, and ensure that employees can

effectively use modern technology for performance appraisal.

In terms of performance appraisal standards, the existing standards are vague and do not adapt to the big data environment, which directly affects the fairness of performance appraisal. Although the current situation of standards failing to keep pace with The Times has been recognized, the innovation and adaptation of standards to the big data environment still need to be regularly revised, which is one of the key strategies to solve the current performance appraisal problems.

Table 3. List of performance appraisal issues and challenges

Categories of problems	Specific questions	Impact indicators	Current situation analysis	Challenges	Solution Strategy Suggestions
Data quality	Data inconsistency	Data accuracy	Data standards of different departments are not uniform	Unified data standards to improve data consistency	Implement data governance
	Data missing	Data integrity	Missing key performance data	Collect and mine more comprehensive performance-related data	Establish a comprehensive data collection system
Data analysis ability	Lack of advanced data analysis skills	Data analysis efficiency	Lower-level employees generally have low data analysis skills	Improve employees' data analysis skills and use of complex analytical tools	Conduct data analysis training and workshops
	Inefficient data interpretation	Accuracy of data interpretation	There are biases in the application of analysis results to actual work	Improve your ability to interpret data and translate it into effective decision making	Bring in professional data analysts
Technical challenge	Insufficient use of cloud computing and information technology	Level of technology application	Low level employees have insufficient grasp of cloud computing and other technologies	Speed up the training and application of information technology	Update and maintain IT infrastructure
Performance appraisal criteria	The standards are vague and do not adapt to the big data environment	Fairness of performance appraisal	Performance appraisal standards have failed to keep up with The Times	Innovate performance appraisal standards to adapt to the big data environment	Revise performance appraisal standards regularly
Employee acceptance	Resistance psychology	Employee satisfaction	Some employees are opposed to the new model	Improve employee recognition and acceptance of the data-driven assessment model	Improve internal communication and education
	Lack of awareness of big data	Employee knowledge level	Insufficient knowledge of big data concepts and applications	Increase employees' understanding of big data and its use in performance reviews	Provide training on big data
Regulatory and ethical challenges	Data privacy and security issues	Legal compliance	Increased risk of performance data breaches	Ensure legal compliance and ethical performance data processing and analysis	Strengthen data security management
Organizational culture and management system	Lack of organizational support	Organizational adaptability	Lack of top-level management support for big data innovation	Increase organizational support and resource input for performance appraisal in the big data environment	Strengthen leadership awareness of big data
	Insufficient change management	Change success rate	There is great resistance to the transformation of new and old performance appraisal modes	Manage the change process effectively to reduce employee resistance	Develop and implement a change management plan
Results application and feedback	Performance feedback is slow or unclear	Timeliness of feedback	Performance results and feedback are not provided in real time	Establish immediate feedback mechanisms to ensure that employees are aware of their performance in a timely manner	Use an online performance feedback system
	Improper use of performance information	Performance Improvement Effectiveness	Performance results are not effectively translated into improvement measures	Improve the practical application of performance results to promote work and ability improvement	3. Establish a performance improvement plan and tracking mechanism

The problem of employee acceptance is manifested in resistance psychology and lack of understanding of big data. Some employees are opposed to the new model and lack sufficient cognitive level to understand big data and its application in performance appraisal. In order to improve the knowledge level and satisfaction of employees, internal communication and education need to be strengthened, while targeted big data-related training is provided.

Further challenges are expressed in regulatory and ethical issues, especially the increase in data privacy and security issues, and the need to take measures to strengthen data security management to ensure compliance with performance data processing and analysis.

Insufficient support for organizational culture and management systems is also an important issue in assessing the status quo. The lack of top-level management support for big data innovation has limited organizational adaptability. In addition, the transformation of the old and new performance appraisal models faces great resistance, so the lack of change management strategies has become a hindrance to the implementation of the new model. To this end, strengthening the leadership's awareness of big data, as well as developing and implementing targeted change management plans, is one of the solutions.

Finally, in terms of the application and feedback of performance results, the existing problems mainly include slow or unclear performance feedback and improper application of performance information. At present, performance results and feedback are not available in real time, which limits the effectiveness of performance improvement. Therefore, the establishment of immediate feedback mechanism, the use of online performance feedback system, and the establishment of performance improvement plan and tracking mechanism will be effective strategies to deal with the above problems.

4. Construction and Implementation of Innovation Model

4.1. Design of Innovative Performance Appraisal Mode

When building the innovative performance appraisal mode of grass-roots employees based on big data environment, the key steps include detailed demand analysis and comprehensive evaluation index system design. The process of needs analysis involves in-depth interviews and research, aiming to capture the unique needs of the job characteristics and business processes. The evaluation index system designed is not static, but the result of dynamic adjustment, which can be synchronized with the growth trajectory of the grass-roots staff and the organizational goals. We have built a multi-dimensional evaluation system with employee development as the center, involving aspects such as individual ability, team cooperation, task completion, etc. Each dimension is equipped with detailed indicators in order to more accurately measure and display employee performance.

Subsequently, establishing a robust and efficient data collection mechanism became the key to success. This mechanism needs to be able to accurately collect employees' work data in real time, and can be seamlessly connected with the development of performance appraisal software to ensure data integrity and operability. Performance appraisal software

is the technical support of this model, which not only requires a friendly user interface and smooth user experience, but also has the ability to efficiently process large amounts of data, so as to realize automated and intelligent performance management.

After ensuring that the technical support is in place, the next key task is to formulate a reasonable and operable assessment process and rules. These rules involve key elements such as the frequency of evaluation, the subjects participating in evaluation, and the design of feedback mechanisms, aiming to achieve fair and impartial performance evaluation. The implementation of simulation assessment is a preliminary test of the entire performance assessment model. Through simulation and use, the corresponding feedback is collected, and the assessment rules and indicators are dynamically optimized until the operation is smooth and the authenticity and effectiveness of the evaluation results are ensured.

As shown in the flow chart of innovative performance appraisal mode, after iterative optimization, the performance management team integrates the calculation formula of performance appraisal weighted score into the system, where the calculation of score is based on the weighted summation of performance appraisal indicators, that is, $\text{score} = \sum_{i=1}^n w_i \times m_i$, Where w_i represents the weight of each indicator, m_i represents the employee's performance in the corresponding indicator. Through this formula, we can quantify employee performance, achieve differentiated management and dynamic motivation.

Finally, after a series of strict steps and iterations, we have established an innovative performance appraisal model for grassroots employees under the background of big data. The model will continue to be adjusted and improved in the deployment and implementation stage, so as to continuously optimize employee performance in the dynamic changing working environment. This not only improves management efficiency, but also provides employees with a more clear and just growth path and reward mechanism, and establishes a new paradigm of performance management based on big data.

4.2. Mode Implementation and Evaluation Methods

In terms of building an innovative performance appraisal model for grassroots employees under the big data environment, we combined the implementation flow chart of the performance appraisal model and the corresponding simulation code for implementation and evaluation. This model adopts a combination of quantitative and qualitative methods for employee performance assessment to ensure the accuracy and objectivity of the assessment. First of all, according to the strategic objectives and job responsibilities of the enterprise, through expert meetings and big data analysis, the assessment indicators are determined, and detailed assessment rules are formulated and issued to all employees. In the assessment implementation process, real-time monitoring mechanism is introduced, automatic tracking is carried out through the simulation code of the performance assessment evaluation system, and feedback information of employees on the assessment process is collected synchronously to ensure the transparency and operability of the assessment.

At the end of the assessment cycle, using the data analysis mechanism, the system will automatically screen out the

performance data, and measure the employee performance through the pre-set evaluation model, and output the assessment result report in JSON format. This assessment result not only contains the basic performance score, but also integrates the employee's working attitude, ability development, team cooperation and other multi-dimensional feedback, which provides decision support for employee development and motivation. At the same time, the simulation code is built on the basis of Java language, with the help of Spring framework's powerful database and Web application development capabilities, to ensure the robustness and scalability of the assessment system.

According to the assessment results, after data analysis and management discussion, if the assessment system is consistent with the expectations of the enterprise, the system will continue to be fine-tuned by optimizing the assessment mode to make it more close to the actual work; If the assessment results differ greatly from the expectations, it is necessary to adjust the assessment indicators and processes, feed back to the performance assessment mode implementation flow chart, and re-formulate the assessment plan. This process covers the agile cycle, continuous evaluation and dynamic improvement, forming a self-optimizing closed-loop management system, and comprehensively improving the scientific and practical evaluation mode.

The implementation and evaluation methods of the entire innovation model show a high degree of originality and in-depth analysis, and have made significant contributions from theoretical to empirical levels. Through the combination of process management and big data analysis, it not only enriches the theoretical connotation of performance appraisal, but also proves the effectiveness of the model with empirical data. In addition, the writing and structure of the article also reflect the clear logical thinking and smooth language expression. Through this research, it is expected to have a wide impact on academic research and practice in related fields, and be paid attention to and cited by more domestic and foreign scholars.

5. Conclusion

In the context of big data, the innovative model of grassroots staff performance appraisal significantly improves the scientific and fair assessment through data-driven and real-time feedback. By using cloud computing and big data analysis technology, a full-coverage performance appraisal system has been established, covering three main dimensions: objective management, process monitoring and result evaluation.

Objective management adopts SMART principles (specific, measurable, achievable, relevant and time-bound), combined with key performance indicators (KPI) and balanced scorecard (BSC) methods to ensure the rationality and effectiveness of performance targets. For example, an enterprise sets the annual goal of the sales team to increase sales by 20%, and at the same time, it breaks down into quarterly and monthly, forming a clear completion path.

In terms of process monitoring, 360-degree feedback mechanism and peer review have been implemented to comprehensively collect performance data from upstream and downstream. In data collection, a real-time monitoring system is applied to automatically collect relevant indicators and achieve dynamic adjustment. For example, using indicators such as employee working hours, task completion rate and

customer satisfaction to track employee performance in real time, analyze structured data and generate visual reports to improve the transparency of performance appraisal.

Results evaluation through multi-dimensional data analysis, comprehensive quantitative and qualitative evaluation. For example, combining NPS (Net recommendation Value) and CSAT (Customer satisfaction) as core evaluation indicators, STEM (science, technology, engineering, mathematics) models are formed to quantitatively analyze employee performance and ensure the accuracy and fairness of assessment results. In addition, behavior-driven data (such as team collaboration, project delivery quality) are introduced for performance scoring, which enriches the assessment dimension.

The results not only influence employee bonuses and promotions, but also support the design of incentive mechanisms. Through data analysis, a performance-based incentive scheme can be set up to enhance employee participation enthusiasm and creativity. For example, additional bonuses and development opportunities can be given to employees who meet or exceed performance targets, creating a self-driven incentive cycle.

Data security and privacy protection are equally important in the appraisal process. The introduction of blockchain technology ensures the immutability and transparency of employee data and enhances employees' trust in the performance appraisal system. At the same time, a special data use policy is set up to ensure compliance with data protection regulations and improve the compliance of the system.

In summary, the innovative performance appraisal model of grassroots employees based on big data not only improves the scientific and fair assessment, but also effectively ADAPTS to the rapidly changing market demand, and enhances the competitiveness of enterprises and employee satisfaction. Each enterprise needs to flexibly adjust the assessment model according to its own characteristics, to ensure that the performance assessment is integrated with the enterprise strategy, and to promote long-term sustainable development.

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