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Research on the Model of Employee Innovation Ability Cultivation in Data Elements-Enabled Enterprises

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ABSTRACT:

In the era of digital economy, data elements are of great significance to the cultivation of innovation ability of enterprise employees. This study finds that the data element-enabled cultivation mode can not only promote the innovation of cultivation mode and meet the talent demand of enterprises in the development of new quality productivity and industrial upgrading and transformation, but also promote the development of enterprises. However, the model faces a number of difficulties, such as the constraints of traditional talent cultivation concepts, difficulties in the integration of data and talent cultivation, insufficient application of technology, and unreasonable allocation of resources. Therefore, the article puts forward targeted strategies, including innovation of training concepts, strengthening technology research and development and integration, optimizing the resource allocation system, etc., aiming to enhance the innovation ability of enterprise employees, help enterprises enhance competitiveness and achieve sustainable development.

Keywords: data elements; enterprise employees; innovation ability; training mode

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1. Introduction

In the era of digital economy, the importance of data elements is becoming more and more prominent. China not only has the conditions to build a mega data market, but also has the foundation to gain a strategic head start in the era of digital economy^[1]. With its huge population base, rich industrial ecology and fast-developing digital technology, China is in a unique position to build a mega data market, and has a solid foundation for seizing strategic opportunities in the global digital economy competition. With its unique permeability and strong replicability, data elements are reshaping the innovation ecosystem, innovating the organizational system, subverting the traditional innovation model, and injecting constant vitality into technological innovation.

Data elements have become the basis for the development of digital economy, and are rapidly integrating into and changing the way of production, life and social governance. With the characteristics of permeability and replicability, data elements have a disruptive impact on the innovation ecosystem, innovation organization system, and innovation model, and become a new kinetic energy to promote technological innovation^[2]. For enterprises, the key to stay ahead in the fierce market competition is to have a strong innovation ability, which ultimately depends on the innovation ability of employees. In the rapidly changing market environment, the traditional talent training model focusing on the transfer of knowledge and skills has been difficult to meet the urgent needs of enterprises for innovative talents. The rise of data elements has brought brand new opportunities for the cultivation of enterprise employees' innovation ability. With the help of big data analysis, artificial intelligence and other technical means, enterprises can accurately grasp the innovation potential and personalized needs of employees, so as to customize more targeted and efficient training programs. However, in the process of practicing data factor empowerment, enterprises are facing difficulties in concept, technology, resource allocation and other aspects. It is of great practical significance to analyze these problems and explore effective solution strategies to promote the innovation ability of employees and enhance the competitiveness of enterprises, as well as to provide theoretical support and practical guidance for enterprises to achieve sustainable development in the wave of digitization.

2. The Value of Data Elements Enabling Enterprise Employee Innovation Capacity Development Models

2.1 Promoting innovation in the mode of cultivating employees' innovative ability

2.1.1 A New Path to Data-Driven Employee Innovation Development

The core of data-driven lies in the use of big data technology to deeply analyze all kinds of data generated by employees in the process of work and study, so as to accurately depict employees' knowledge reserves, skill levels, innovative thinking characteristics, and potential innovation capabilities. As a new production factor, data has different characteristics from traditional production factors^[3]. Enterprises can build intelligent talent development platforms, collect employees' project execution data, training feedback data, performance evaluation data, etc., and use advanced data analysis algorithms to tap into employees' innovative learning modes and potential innovation needs.

These data provide scientific teaching feedback for the enterprise training department, which helps optimize the design of training courses. For example, if an employee is found to have unique creativity in marketing through analysis, but lacks in data analysis ability, the enterprise can recommend data analysis-related training courses and practical projects to help him improve his innovation ability. At the same time, data-driven can also realize the dynamic allocation of innovation resources within the enterprise to ensure that each employee can obtain the most suitable innovation resources for their own needs, and improve the accuracy and efficiency of innovation ability training.

Compared with the traditional training model that relies on experience and intuition, the data-driven path can objectively and accurately reveal the innovative characteristics and needs of employees and provide trainers with a scientific basis. This not only helps to improve the quality of trainers' teaching, but also stimulates employees' interest and motivation in innovation learning, making them more actively involved in the process of innovation capability enhancement. In addition, through data analysis and feedback, enterprises are able to continuously adjust and improve training policies and practices to meet the demand for talents in the innovative development of enterprises, which is an inevitable trend for enterprises to realize the modernization of innovative talent training.

2.1.2 Intelligent Empowerment Personalized Innovation Capacity Cultivation New Ecology

The new ecology of intelligent-enabled personalized innovation ability cultivation is the result of the in-depth application of data technology in the field of enterprise talent cultivation. With the help of artificial intelligence, big data and other advanced technologies, enterprises are able to carry out all-round monitoring and in-depth analysis of the innovative learning process of employees, and then provide employees with customized innovative ability training programs. This personalized training mode fully respects the individual differences of employees, and can better stimulate the innovation potential and interest of employees.

The intelligent learning platform can intelligently adjust the training strategy and content according to the employees' learning progress and feedback, ensuring that the employees can enhance their innovation ability at the most suitable pace. At the same time, smart technology also provides employees and trainers with rich interactive tools and innovative resources to promote knowledge sharing and innovative exchanges, creating an open, collaborative and innovative learning atmosphere. For example, virtual reality (VR) and augmented reality (AR) technologies are utilized to provide employees with immersive innovation practice scenarios to enhance their innovation experience and practice ability.

Building a new ecology of intelligent empowerment personalized innovation ability training requires enterprises to make concerted changes in concept, technology and management. Enterprise managers should abandon the traditional unified training model, establish the concept of personalized and intelligent talent cultivation, and put the innovative development of employees in the first place. Technology developers should continue to optimize the functions and user experience of the intelligent learning platform to ensure that the technology is advanced and practical. Corporate human resources departments should also actively promote the reform and innovation of the corporate training system, and create a good policy environment and support conditions for the cultivation of personalized innovation ability empowered by intelligence. Through the joint efforts of all parties, this innovation ecosystem will continue to improve and cultivate more high-quality employees with innovative spirit and practical ability for enterprises.

2.2 Meeting the real needs of enterprise innovation and development

2.2.1 Adapting to the needs of the new quality of productivity development

In the era of digital economy, new quality productivity has become a key force driving the development of enterprises. The development of new quality productivity requires enterprise employees not only to have solid professional knowledge and skills, but also to have innovative thinking, data analysis ability and problem solving ability. Therefore, enterprises must follow the pace of the times, with the help of data elements empowerment and other innovative means, to cultivate high-quality employees to adapt to the requirements of the new quality productivity. This not only helps to enhance the overall competitiveness of enterprises, but also provides a solid talent guarantee for the sustainable and healthy development of enterprises.

Enterprises should fully recognize the important role of data technology in the cultivation of employees' innovation ability. Through in-depth mining and analysis of employees' work data and learning data, enterprises can more accurately understand the needs, interests and potentials of their employees, so as to provide them with personalized and efficient training services. At the same time, data technology can also promote the optimal allocation of resources

within the enterprise and improve its innovation efficiency and overall effectiveness. Enterprises should actively explore the application of data technology in the field of employee innovation ability training to promote the innovation of training mode and the improvement of talent training quality, so as to better adapt to the needs of the development of new quality productivity.

2.2.2 Meeting the needs of industrial upgrading and transformation

At present, industrial upgrading and transformation are accelerating, emerging industries are emerging, and the demand for talents is characterized by diversification and specialization. The application of advanced technologies such as artificial intelligence and intelligent devices in the digital era has changed the employment pattern^[4], and the wide application of advanced technologies has changed the production and operation mode of enterprises, and also put forward higher requirements for the ability of employees, and high-quality, high-skill, high-level composite talents have become scarce resources for enterprise development. Data elements in the era of data economy have an important impact on enterprise strategy, business model, asset structure, strengthening the core position of data elements in enterprise value creation, generating demand for data elements, able to determine the transaction price for data elements based on the contribution of data elements to the creation of monetary value, and providing demand signals for the supply of data elements^[5].

In this context, enterprises need to reform the traditional talent training model and focus on cultivating employees' innovative thinking and practical ability, so that they can quickly adapt and grow in the complex and changing market environment. The data-enabled employee innovation ability training model plays an important role in meeting the needs of industrial upgrading and transformation. Through data analysis and mining, enterprises can accurately grasp the development trend and talent demand of emerging industries and adjust the training content and teaching methods in a targeted manner. At the same time, data technology can also optimize the configuration of enterprise training resources, improve the utilization efficiency of training resources, and provide more high-quality talent resources for industrial upgrading and transformation. Therefore, enterprises should increase the research and promotion of the data element-enabled employee innovation ability training mode, and constantly improve and optimize this mode to better meet the needs of industrial upgrading and transformation of enterprises.

3. The Dilemma of Data Elements Enabling the Model of Employee Innovation Ability Training in Enterprises

3.1 Dilemma at the conceptual level of talent training

3.1.1 Bindings of the traditional concept of talent training

The traditional concept of enterprise talent training often focuses on the transfer of knowledge and skills, emphasizes the employees' compliance with the established rules and processes, and ignores the personalized development of employees and the cultivation of innovation ability. Under this concept, enterprise training mainly revolves around a fixed curriculum and standardized assessment methods, making it difficult to meet the diverse and innovative needs of employees. Specifically, on the one hand, the lecturing experts dominate the training classroom, and the employees passively accept the knowledge, lack of enthusiasm and initiative, and it is difficult to obtain real inspiration; on the other hand, the training method is single, which cannot stimulate the interest and enthusiasm of the employees, and there is not enough much attention to the changes in the entrepreneurial process^[6].

In the era of data empowerment, data can accurately analyze the innovation potential, interest preferences and development needs of employees, providing the basis for personalized innovation ability training. However, under the influence of traditional concepts, enterprise managers and trainers often ignore the value of such data and still adopt "one-size-fits-all" training approach, resulting in the failure to fully stimulate employees' innovation ability. In addition, the traditional concept of over-reliance on authority also limits the application of data technology in talent training. In the process of enterprise training, trainers are usually regarded as the authority of knowledge, and employees passively accept knowledge, a model that is not conducive to the cultivation of innovative thinking. In the data-enabled environment, trainers need to change their roles and become the guides and supporters of employees' innovative learning, but some trainers have difficulty adapting to this role change and are skeptical about data technology-assisted training, which hinders the development of the data element-enabled employee innovation ability training model.

3.1.2 Difficulties in integrating data and talent development

The constraints of traditional talent training concepts are one of the main obstacles to the integration of data and talent training. For a long time, enterprise talent training has been influenced by traditional thinking, focusing too much on short-term business skills improvement and ignoring the important role of data in strategic planning of talent training, precise training and development of innovation ability. Even if enterprises introduce advanced data technology, if managers and trainers still adhere to traditional training concepts and are not willing to change training methods and evaluation mechanisms, data technology will be difficult to play its due value, and the development of employees' innovation ability will be hindered.

The traditional concept of talent training also has limitations in the positioning of training objectives. Traditional concepts tend to regard talent cultivation as a tool to meet the current business needs of the enterprise, neglecting the comprehensive development of employees and the long-term cultivation of innovation ability. Under the mode of data factor empowerment, enterprises need to cultivate compound talents with innovative thinking, cross-border integration ability and independent learning ability. If enterprises can't change the cultivation goal and still confine themselves to the traditional talent cultivation mode, it is difficult to achieve substantial results in the data factor-enabled employee innovation ability cultivation mode.

3.2 Dilemmas at the level of technical application of talent development

3.2.1 Difficulty of data collection and processing

In the process of cultivating the innovation ability of employees in enterprises, data collection faces the challenges of privacy protection and legality. Data collection involves employees' personal information, work behavior data and other sensitive content, and enterprises must strictly comply with relevant laws and regulations to ensure the legality and compliance of data collection. However, in practice, it is a challenge to find a balance between protecting employee privacy and obtaining necessary data. Employees' concerns about the security of their personal data may cause them to resist data collection, making it more difficult, which in turn affects the implementation of data element enablement.

Even if enterprises succeed in collecting a large amount of data, the shortage of data-processing technology and talents limits the effective utilization of data. Data processing technology is constantly being updated and modernized, but enterprises are relatively short of technology and talent reserves in data processing. This makes many valuable data can not be fully excavated and analyzed, and can not provide strong support for the cultivation of employee innovation ability. Therefore, strengthening the research and development and application of data processing technology and cultivating professionals with data processing capabilities are the key links in the cultivation of employee innovation ability empowered by data elements.

3.2.2 Immature integration of technology and education

One of the major reasons for the obstacles to the integration of technology and talent training is the immaturity of the application of educational technology. Although data technology and artificial intelligence have a broad application prospect in the field of enterprise talent cultivation, the current application of these technologies is still in the primary stage, and there are many problems. For example, the technical means of data collection and processing are imperfect, making it difficult to ensure the accuracy and completeness of data; the lack of unified standards and norms for the application of educational technology, and the difficulty of data sharing and interoperability between different systems have affected the effect of the comprehensive application of data elements in enterprise talent training.

In addition, the lack of technological literacy of enterprise trainers is also an important factor constraining the integration of technology and talent training. The data element-enabled employee innovation ability training model requires trainers to have a high level of technical literacy and be able to skillfully utilize data technology and artificial intelligence tools for training design, implementation and evaluation. However, at present, many trainers lack the necessary technical knowledge and skills to fully utilize the advantages of data technology in training, and are even resistant to new technologies, further hindering the deep integration of technology and talent training. Enhancing the technical literacy of trainers has become the key to promoting the deep integration of technology and talent training.

3.3 Dilemma at the level of resourcing talent development

3.3.1 Uneven distribution of resources for talent development

Unequal distribution of resources is a prominent issue in the process of data elements empowering the training of employees' innovation ability in enterprises. Within the enterprise, there are differences in the opportunities for employees in different departments and at different levels to access training resources. Core business departments and top managers often have access to more and better quality training resources, while some marginal departments and grassroots employees are difficult to enjoy the same treatment. At the same time, the branches of enterprises in different regions also face the problem of uneven distribution of resources, with branches in economically developed regions usually able to obtain more resource support, while branches in less developed regions are relatively lacking in resources.

This unbalanced distribution of resources not only affects the comprehensive cultivation of employees' innovation ability, but also may lead to further widening of the development gap between employees, affecting the overall cohesion and innovation atmosphere of the enterprise. Although big data and intelligent technologies offer the possibility of optimizing resource allocation, in practice, due to the influence of enterprise management system, geographical differences and other factors, it is difficult for these technologies to truly achieve a fair distribution of resources.

3.3.2 Inefficient utilization of resources for talent development

In addition to the uneven distribution of resources, enterprises also have problems with the efficiency of utilizing talent training resources. Although big data technology can realize accurate management and efficient allocation of training resources, in practice, it is difficult to give full play to the advantages of the technology due to the different levels of mastery of the technology by trainers and their limited ability to analyze data. Some enterprises lack scientific planning and effective management when introducing digital intelligence technology for talent training, blindly pursuing the advancement of the technology while neglecting the match between the technology and the actual needs of the enterprise, which results in the training platforms and projects constructed with large amounts of investment and resources not being effectively utilized, resulting in a waste of resources and hindering the sustainable development of the training mode of the employee's innovation ability.

4. The construction of data element-enabled enterprise employee innovation ability cultivation model

4.1 Data elements empower innovative talent development concepts

4.1.1 Breaking with tradition to revolutionize the concept of training

To break the traditional concept of training, first of all, we should abandon the training mode which is mainly based on knowledge transfer and focus on cultivating the innovative thinking and practical ability of employees. In the context of data elements empowerment, enterprises should realize that the goal of training is not only to enhance the existing skills of employees, but more importantly, to stimulate the innovation potential of employees. Through data analysis and mining, enterprises can gain an in-depth understanding of the innovation needs and interest preferences of employees, provide personalized and diversified training content and methods for employees, and cultivate high-quality employees who can adapt to the needs of enterprise innovation and development.

Enterprises should also establish an employee-centered view of training. The traditional talent training model is often centered on the enterprise and the trainer, ignoring the subject position of employees and individual differences. In the data-enabled environment, employees should become the main body of training, and trainers should be transformed into guides and supporters of employee innovation and learning. Enterprises should break the excessive dependence on the authority of trainers, encourage employees to actively participate in the training process, and play their subjective initiative and creativity. At the same time, data technology is utilized to provide employees with rich learning resources and interactive tools, promote knowledge sharing and innovative exchanges among employees, and create an open and innovative training atmosphere.

4.1.2 Promoting deeper integration of data and talent development

Promoting the deep integration of data and talent cultivation requires enterprises to update their concept of talent cultivation. Enterprises should fully recognize the important value of data in talent training, and shift from traditional empirical training to data-driven precision training. Focus on the personalized development of employees, pay attention to the application of data in the analysis of accurate training needs, personalized training program design and other aspects, and actively explore innovative ways of applying data technology in the field of talent training.

In order to realize the in-depth integration of data and talent training, enterprises also need to strengthen the application of technology and innovation. In view of the current problems in the application of data technology in talent training, they should increase investment in research and development, improve data collection and processing technology, and improve the educational data analysis model. At the same time, focus on cultivating professionals with data literacy and training technology to provide talent support for the deep integration of data and talent training. Through technological innovation and talent training, the role of data in the cultivation of enterprise employees' innovation ability is fully utilized to promote the sustainable development of the enterprise talent training model.

5. Data Elements Enabling Enhanced Practice Technology Applications

5.1 Enhanced research and development of data collection and processing technologies

Strengthening the research and development of data collection technology is the basis for the cultivation of employee innovation capacity in data elementenabled enterprises. Enterprises should develop efficient and safe data collection tools and methods under the premise of ensuring employee privacy and security and data legitimacy. Using advanced sensor technology, web crawler technology, etc., they can accurately collect multi-dimensional data of employees in the process of work and study, including work performance data, learning behavior data, and innovation practice data. At the same time, it improves the automation and intelligence of data collection, reduces manual intervention, ensures the completeness and accuracy of data, and provides a reliable basis for subsequent data processing and analysis.

Deepening the application of data processing technology is crucial to enhancing the value of data. Enterprises should introduce advanced data analysis algorithms and models, such as machine learning and deep learning algorithms, to deeply mine and analyze the collected data. Data analysis reveals employees' innovative learning patterns, interest preferences, and potential innovation capabilities, providing trainers with accurate teaching feedback and helping trainers optimize training course design. At the same time, based on the results of data analysis, we customize personalized innovative learning paths for employees to improve the relevance and effectiveness of employee innovation ability training. Continuously innovate data processing technology, constantly improve data utilization efficiency, and give full play to the driving role of data in the cultivation of employee innovation ability.

5.2 Promoting the deep integration of technology and education

To promote the in-depth integration of technology and talent training, the first step is to promote the close integration of technology standardization and the practical application of enterprise talent training. Enterprises should formulate unified standards and specifications for the application of data technology to ensure that data between different training systems can be shared and interoperable. Through technology standardization, the barriers between technology and talent training should be broken down, and the wide application and deep integration of data technology in the field of enterprise talent training should be promoted, so as to improve the quality and efficiency of training. Strengthening the technical training of trainers is the key to promoting the in-depth integration of technology and talent training. Enterprises should provide trainers with systematic technical training courses to help them master the latest data technology and training concepts, and improve their technical literacy and integration capabilities. Trainers should have the ability to use data technology for training needs analysis, training program design, and training effect evaluation, and be able to skillfully use various data technology tools and platforms to organically integrate data technology with training and teaching. By improving the technological literacy of trainers, it promotes the in-depth integration of technology and talent training, and cultivates more employees with innovative thinking and practical ability.

6. Data elements enable optimized resource allocation systems

6.1 Data-driven precision matching

Data-driven accurate matching is an effective means to realize the balanced distribution of enterprise talent training resources. Enterprises can use big data analysis, machine learning and other technologies to comprehensively monitor and analyze the training needs of employees in different departments and regions as well as the supply of training resources within the enterprise. Through the establishment of a scientific resource allocation model, taking into account the job requirements, skill level, innovation potential and other factors of employees, it can realize the reasonable distribution of training resources between different departments and different regions and solve the problem of uneven resource distribution.

Data-driven precision matching can also meet the personalized development needs of employees. By collecting and analyzing various types of data from employees' work and learning processes, companies can gain a deeper understanding of employees' individual differences and development needs, and customize personalized training paths and resources for employees. For example, according to the employee's interest preferences and career planning, recommend appropriate training courses, practical projects and mentor guidance, so that employees can obtain the most suitable training resources, enhance learning efficiency and satisfaction, stimulate innovation potential, and realize the precision and efficiency of talent training.

6.2 Intelligent optimization of resource allocation

Intelligent optimization of resource allocation is a key initiative to improve the efficiency of enterprise talent training resource utilization. Enterprises can introduce intelligent algorithms and data analysis technology to monitor and dynamically adjust the use of training resources in real time. Intelligent systems can accurately analyze the effects of different training projects and different training methods, predict future training needs, and achieve efficient use of training resources through optimized scheduling. For example, based on the training effect evaluation data, it can adjust the content and duration of training courses in a timely manner, reasonably allocate the resources of training teachers and equipment, avoid idle and wasteful resources, ensure the dynamic balance of training resources between different levels and fields, and enhance the overall effectiveness of enterprise talent training.

With the help of intelligent algorithms, enterprises can deeply mine employees' learning behavior data and analyze their acceptance of different training resources and learning effects. For example, by tracking employees' learning trajectories in online training courses, the frequency of participation in interactions, and the results of post-course tests, etc., it is possible to determine employees' mastery of and interest in learning specific course content. Based on the results of these analyses, the intelligent system can accurately recommend subsequent training content for employees, such as when employees are found to have excellent performance in a professional skills course and have the potential for further in-depth learning, it automatically pushes a higher level of related courses for them, realizing a seamless connection of learning paths.

At the same time, intelligent optimization of resource allocation also enables macro-control of resources at the enterprise level. In terms of training teachers, the intelligent system rationally arranges teachers' teaching tasks based on their teaching expertise, teaching evaluations and feedback from trainees. For popular and effective training courses, more excellent teachers will be deployed to ensure the quality of teaching; for courses with low participation, the reasons will be analyzed and teachers' arrangements will be adjusted or course contents will be optimized. In terms of training equipment resources, the use of equipment is monitored in real time through Internet of Things (IoT) technology, and the maintenance and updating plan of equipment is reasonably arranged.

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