Research Article

Research on Flexible Management of Human Resources under the Background of Wireless Communication and Internet of Things

Liqiu Qu

Anshan Normal University, Anshan 114000, China

Correspondence should be addressed to Liqiu Qu; qu_liqiu@outlook.com

Received 19 January 2022; Revised 31 March 2022; Accepted 15 April 2022; Published 10 June 2022

Abstract

With the continuous progress of communication technology, the country has also proposed a new strategy for the development of wireless communication and the Internet of Things, with the purpose of promoting the development of the intelligent connection of all things, the digitization of enterprise communication, and the development of intelligent new industries. The integration of wireless communication and the Internet of Things has also put forward higher requirements for management talents in various industries. Adopting appropriate human resource management methods to meet the needs of talents in the digital transformation of various enterprises has become the focus of scholars and enterprises. In order to solve this focal problem, this paper starts from the meaning of flexible management of human resources in various industries and combines wireless communication and Internet of Things technology to design a system that conforms to the flexible management of human resources in various industries.

1. Introduction

1.1. Wireless Communication. Wireless communication technology is a technology for wireless information transmission according to the standards formulated by the International Communication Organization, which can realize signal transmission without cables and other conduction. The current mainstream wireless communication technologies include Bluetooth, RFID, WIFI, and ZigBee [1]. The latest wireless communication technologies are combined with the fifth-generation communication technology [2]. The fifth-generation mobile communication technology
technology improves performance in all aspects on the basis of 4G. The most significant feature that users feel is the improvement in refresh speed. The goal of the fifth-generation mobile communication technology is to create an ultrareliable, ultrashort delay, and ultrahigh-speed transmission network system. Its networking view is mainly divided into access level, regional level, aggregation level, and center level. Service capabilities include mobile services, MEC, and network slicing that are specified on demand [3]. 5G technology introduces device-to-device communication and edge computing technology. Edge computing technology MEC provides cloud-supported computing services at the edge of the network processing center, that is, placing servers with powerful processing capabilities around 5G base stations to centralize the processing capabilities of nearby servers. It can provide the surrounding network users with effective cloud computing support [4]. Device-to-device communication is a communication technology in which user data is directly transferred between devices without being processed by the network under the command of the 5G base station [5]. This transmission method can improve the efficiency of information transmission and reduce the load of the base station [6].

1.2. Internet of Things. The Internet of Things technology has made leaps and bounds in the past ten years. Today, key IoT implementation scenarios such as smart cities, smart parks, and smart buildings are no longer just concepts [7]. The application of the Internet of Things in smart buildings makes the status monitoring of buildings more intelligent, greatly increases the efficiency of monitoring sensor values, saves labor costs for on-site detection, and eliminates risk factors in the detection process. Smart light poles and other objects have appeared on the streets of various cities. Networking infrastructure, smart home, as the IoT application scenario closest to public life, has become the focus of attention in academia and industry. It represents the use of Bluetooth, WIFI, infrared, and other communication technologies [8], which will be accompanied by various sensors. Everyday electronic household products are connected [9]. It utilizes the long-term powered gateway module as the central network control [10]. In the past few years, benefiting from the development of communication and computer technology, the Internet of Things has achieved rapid development in the fields of medical care, intelligent driving, and the Internet of Things [11]. The Internet of Things is the “Internet of Everything,” which combines the Internet with various sensor devices to achieve the goal of interconnecting everything at all places and at all times [12]. Usually, the IoT system is divided into three layers: the first is the application layer, which provides readable and actionable data to IoT users according to the data collected by the sensor devices and the data processing results of the server. Common applications include the Internet of Things and the Internet of Vehicles [13]; the second is the network layer, the devices communicate through the Internet, and the layer that carries the communication between the devices is the network layer, and the key technologies include Bluetooth and WIFI [14]; the third is the perception layer, that is, the use of sensor devices to collect the layer of external environmental data, and the key technologies are GPS, RFID, etc. [15].

1.3. Human Resource Flexible Management Theory

1.3.1. The Theory of Management by Objectives. The flexible management of human resources is the same as the view supported by many philosophers. From the perspective of “people-oriented,” human resource management is not based on specific company regulations and systems [16] but is based on the consensus of the overall employees of the enterprise and the atmosphere is arranged in a humanized way. In other words, it is to encourage employees to love their work in a soft way and finally realize the autonomous and conscious human resource management of employees [17].

The theory of management by objectives was originally proposed by scholars to mobilize employees to set and complete goals together [18]. The theory proposes that the goals of the group should be jointly designated by all members, the members of the group should manage themselves, and the group leaders should be appointed as little as possible, so that all participants are in a balanced state, and the ultimate goal should still be higher than no goal management benefit [19]. Its key point lies in the management method jointly specified by all staff, so that participants can reach a consensus at the beginning of the goal and then evaluate the results of the individual’s contribution to the whole. This theory is the prototype of flexible management of human resources, because its core idea is to stimulate participants’ self-control in a free way to make overall contributions by reducing participants’ pressure [20].

1.3.2. Scenario Management Theory. The key point of the situation management theory is that the group changes with the overall environment and group needs and finds a management plan that matches the needs according to the specific group needs [21]. Situational management theory constitutes the key management scheme of modern large-scale enterprises, and it guides the human resource management of most enterprises. Like management by objectives, it manages from a holistic perspective [22]. The theory proposes that the internal and external conditions of the group are different, and the principles should be separately managed and established according to the internal and external conditions.

The flexibility, variability, and harmony of scenario management theory provide theoretical support for flexible management of human resources, because scenario management also advocates flexible changes and flexible management, adjusts according to the external environment, and finally adapts to the background of wireless communication and the Internet of Things under the rapid changes of information; the flexible management of human resources is finally realized, and the profits and employee loyalty of enterprises in various industries are improved [23].
1.3.3. Maslow’s Theory of Needs. Maslow, a psychologist, put forward the theory of needs at the end of World War II, which divides human needs into five different categories [24].

Maslow’s colleagues also agree that people’s needs are closely related to the development of the group and the current situation [25]. For example, in developing countries such as India and Malaysia, the safety and physical needs of citizens are greater than the other three needs, and in developed countries such as the United States and Switzerland, people pay more attention to self-actualization, respect, and social interaction. It is mainly determined by the country’s economic development and culture [26].

In addition, Maslow’s species needs can also be divided into pyramids from top to bottom according to the degree of needs. Among them, self-actualization and esteem needs are the top needs. These two needs need to be realized after social, safety, and physiological needs are realized. It will begin to feel the need to implement [27]. The theory also proposes that everyone is in between one or two needs, and there is a dominant need that governs individual actions [27].

Maslow’s theory also believes that various needs are in a progressive relationship. When one need is realized, it will start to depend on another requirement. When all needs are required, the most critical requirement will be selected for realization, and the highest-level requirement will be realized. It is the long-term goal of most people [28]. In addition, not everyone develops according to the order of the level, and some people will choose higher-level needs to achieve in different environments, which is similar to the pursuit of idealistic poets [29].

2. Research on the Influencing Factors of Flexible Management of Human Resources under the Background of Wireless Communication and Internet of Things

This chapter mainly analyzes the development status and problems of human resource management in various industries in my country.

In the context of the rapid development of wireless communication and the Internet of Things, the management of various industries will also follow the development of technology and undergo digital transformation. In order to design a human resource management scheme that conforms to the characteristics of the times, it is necessary to analyze the current status of human resource management in combination with the background of technological development and summarize the current status of human resource management in various industries in my country, so as to provide a flexible management scheme for industrial human resources that conforms to scientific laws.

In the era of wireless communication and the Internet of Things, various industries are undergoing digital transformation, which brings great challenges to human resource management. Ensuring that companies can maintain their competitiveness through human resource management costs is the current focus of business managers.

With the rapid development of wireless communication technology, information technology has also accelerated progress. Nowadays, recruitment of various companies is conducted through the Internet. Under the influence of the epidemic, some companies even conduct interviews through the Internet.

With the gradual popularization of Internet of Things technology, training methods in various industries have become more intelligent. Most companies will use multimedia teaching tools for training. In the direction of performance and salary management, companies in various industries also use information systems. For management, in recent years, enterprises in various industries have begun to reform their human resource management methods according to the development of technology of the times. As shown in Table 1, there are still many problems.

According to the analysis of professional institutions, the positive impact and negative impact on the flexible management of human resources are related, and the two kinds of data are related to the flexible management of human resources, as shown in Figure 1.

After a large number of literature analysis, this paper determines that the current problems of human resource management in various industries mainly include the following four directions:

1. The standards for performance evaluation of remuneration are not uniform

Most companies do not communicate with employees when specifying performance appraisal standards, employees do not have the right to evaluate the salary system, and qualitative assessments account for the majority of cases. There are disputes in the salary assessment of employees in scientific research positions and functional positions, while employees in management positions usually have a direct qualitative salary of 4 times the salary of ordinary employees, and performance management is designed to pursue the current situation too much, and there is no planning for the long-term salary of employees, which is not conducive to the long-term operation of the enterprise.

2. The enterprise has no perfect training program

After most companies recruit new employees, they will be assigned to work after a short period of basic training. There are not many opportunities for in-service employees to receive new skills training. Especially in the current development of wireless communication and Internet of Things technology, new technology training of the personal and business development of employees is especially important but is overlooked by most businesses.

3. The information technology of most enterprises is backward

With the rapid popularization of wireless communication and Internet of Things technology, the demand for
information technology and intelligent technology of enterprises has also increased. However, most enterprises still adopt the traditional human resource management model, and more repetitive labor has consumed the staff of the human resource department, energy, and time.

(4) The most common human resource management problem in enterprises today is the lack of overall planning for human resources

The plan should be based on the development goals and strategies of the enterprise and be designed according to the supply and demand of talents for enterprise development. In the end, it can ensure the needs of talents in various positions for the enterprise and reasonably arrange the employees of the enterprise to the corresponding positions, so as to give full play to the individual’s role in the enterprise, which is the biggest advantage. However, in fact, most employees have not been assigned appropriate positions in the enterprise. The lack of overall planning has led to the lack of professional talents and increased the workload of some employees.

3. Questionnaire Survey and Data Analysis

3.1. Questionnaire. In order to carry out the questionnaire survey, this paper distributed questionnaires through field visits to enterprises in different industries and questionnaires on the website of Questionnaire Star. A total of 350 questionnaires were distributed to human resource managers and employees of different enterprises, and 320 questionnaires were finally recovered, and the invalid questionnaires were sorted out. The number of valid questionnaires obtained is 290. The types of enterprises visited on the spot include papermaking, machinery, computers, finance, and agricultural products. The following completes the data analysis of the reliability and validity of the questionnaire.

First, the reliability is tested, and the overall reliability is measured by using the Cronbach’s coefficient, after scientific theoretical analysis, when the Cronbach’s coefficient is greater than 0.7 and the correlation of the statistical contents of each table is greater than one-third. The reliability of this questionnaire is shown in Table 2.

It can be seen from Table 2 that the parameters related to reliability in this survey are stable, which meets the requirements of reliability in the questionnaire survey theory.

Random statistics were conducted on the relevance of the questionnaire content, and the test results were found as shown in Figure 2.

From Tables 1 and 2 and Figure 2, it can be known that the Cronbach’s coefficient is far beyond 0.7, and the content correlation is far beyond 0.35. From this courseware, the human resource flexible element scale of the questionnaire meets the reliability conditions, and the test result will be acceptable later.

The validity analysis of the questionnaire is to complete the analysis of the correct situation of the questionnaire. Through scientific theory, it is known that the questionnaire KMO is greater than 0.6, which means that the validity and accuracy of the questionnaire are high. By testing the KMO of the questionnaire, it is found that the KMO of this paper is 0.933, which is much larger than the value of 0.6, which proves that the validity of the questionnaire in this paper is high; eigenvalues, partial data of total variance, KMO, and Bartlett test are shown in Table 3.

The data of the questionnaire analysis results in Table 3 were further processed, 14 factors with eigenvalues greater than 1 were extracted, 6 question options with low willingness to fill out were excluded, and 50 selection questions were left. The results show that the total variance of this data analysis is 83.3%, which also shows that the questionnaire issued this time has a high level of validity.

The corresponding explained total variance is shown in Figure 3.

3.2. Data Analysis. In order to study the correlation between different variables, according to the content of the questionnaire, this paper adopts the correlation analysis method to analyze the human resource flexible reward, human resource flexible assessment, human resource flexible training, human resource flexible planning, human resource information management, flexible corporate culture, and human resources. The related variables such as enterprise flexible management

<table>
<thead>
<tr>
<th>Different company</th>
<th>Problems in human resource management</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>No corporate culture</td>
</tr>
<tr>
<td>B</td>
<td>Insufficient training</td>
</tr>
<tr>
<td>C</td>
<td>No long-term plan</td>
</tr>
</tbody>
</table>

Figure 1: Positive effects and 4 negative effects are associated.

Figure 2: The most common human resource management problem in enterprises today is the lack of overall planning for human resources.
system are analyzed, and the analysis method is shown in formula (1a) and formula (1b):

$$R = \frac{\sum (X_i - \bar{X})(Y_i - \bar{Y})}{\sqrt{\sum (X_i - \bar{X})^2 \sum (Y_i - \bar{Y})^2}}.$$  (1a)

$$\text{var} \left( \sum_{i=1}^{n} X_i \right) = \sum_{i=1}^{n} \text{var}(X_i) + 2 \sum_{i \neq j} \text{cov}(X_i, X_j).$$  (1b)

Among them, \(x\) represents the degree of flexible management of human resources, \(i\) represents flexible management of human resources at different frequencies, and \(Y\) represents the historical reference value of flexible management of human resources.

Set the above 7 elements as P1-P7, respectively. Assuming that the correlation range is (0, 1), the analysis results are shown in Table 4.

It can be seen from the correlation analysis theory that the flexible management of human resources has a high degree of correlation with the above seven variables. In order to study and predict the causal relationship between the above variables and the flexible management of human resources, regression analysis method is used to study, and the least square regression equation is established for the variables.

$$\hat{\beta} = (X^T X)^{-1} X^T y,$$  (1c)

$$\text{SSReg} = \sum (\hat{y}_i - y)^2 = \hat{\beta}^T X^T y - \frac{1}{n} (y^T uu^T y).$$  (1d)

The SPSS software was used to carry out regression statistics on variables, and the specific conditions are shown in Table 5.

The results show that the correlation between variables and flexible management is 0.764, indicating that its regression performance meets the requirements. After adjustment, the coefficient of determination is set to 0.584, and the \(F\) value is set to 41.663. This value indicates that the above seven variables can explain the flexible management of human resources, with a high degree of correlation, and can obviously predict the changes in flexible management of human resources. The most influential human resource flexible management is \(x_3 = \text{human resource flexible training}\), and the least impact on human resource flexible management is \(x_5 = \text{human resource information management}\).

### 4. Human Resource Flexible Management Scheme under the Background of Wireless Communication and Internet of Things

Human resource correlation analysis can also be related to Maslow’s Ladder of Needs Theory to design a scheme that conforms to flexible human resource management. After the correlation and regression analysis in the previous chapter, the corresponding influencing factors of human resource flexible management in various industries have been determined, and different influencing factors have positive effects on the flexible management of human resources in various enterprises. The formulation of flexible management system is the first step to realize humanization of human resources. In addition, flexible corporate culture can also make employees more loyal to the enterprise. Enterprise information management can reduce the workload of employees and increase the work efficiency of employees in the human resource department of the enterprise. Save time for data processing in the human part of employees in other departments. Human resource flexible planning, training, and performance appraisal can further improve the enthusiasm and quality of employees and ultimately benefit the enterprise.

The flexible management scheme of human resources under the background of wireless communication and Internet of Things technology can be designed as follows:

1. Combined with the latest trends in technological development, new technology training is provided to enterprise employees. After employees receive information technology training, their work efficiency and quality will be improved, performance appraisal problems can be solved, and the company's
flexible management culture atmosphere will also become better; the other is to further combine the Internet of Things technology to promote the informatization of human resource management of enterprises. The Internet of Things devices allow all things to be interconnected, including the fingerprints and irises of enterprise employees. They can be entered as personal characteristics into the corresponding human resource management intelligent devices, and the identity information of employees can be identified. At the same time, improve the efficiency of work, reduce the workload of employees and personnel in the human resources department, and improve the efficiency of enterprise operation.

(2) On the whole, long-term planning of flexible management of human resources, especially in combination with wireless communication technology, although 5G is not yet fully popularized, countries have begun to announce research on 6G, and enterprises cannot do without communication technology in the direction of flexible management of human resources.
resources, especially. It is a wireless communication technology, which runs through all aspects of the flexible management of human resources in enterprises and can provide technical support for enterprise employee communication, enterprise resource information database, enterprise equipment exchange, and enterprise informatization, as well as for online human resource management and basic support.

According to the postsecondary feedback survey of the participants who issued the questionnaires, it was found that after the implementation of the flexible management of human resources, the operation efficiency of the enterprise has been significantly improved compared with that before the implementation, but after a long period of time, the operation efficiency has gradually developed and stabilized. The specific situation is shown in Figures 4 and 5.

5. Conclusion

According to literature research, this paper first summarizes the basic concepts and meanings of wireless communication and Internet of Things technology and then analyzes the current problems in human resource management in various industries. According to the existing problems, it is pointed out that the flexible management of human resources can be adopted, and the key components of flexible management of human resources in various industries under the background of wireless communication and Internet of Things technology are analyzed. After conducting field visits and questionnaire surveys in different industries, the method of statistical analysis is used to summarize the influencing factors corresponding to the flexible management of human resources in various industries under the background of wireless communication and Internet of Things technology. Then, carry out statistical data processing to obtain the factors that are positively related to the flexible management of human resources in various industries. The least square regression formula and correlation analysis used in this paper are of great help to improve the accuracy of the parameter analysis of human resource flexible management. The corresponding levels of flexible human resources management are divided by the determined positive correlation factors, and then, the flexible management schemes of human resources in various industries are designed according to different levels. Finally, the feasibility of the scheme is verified. There is a substantial increase.

As early as the concept of enterprise first appeared, the scheme of flexible management of human resources also appeared. However, very few enterprises have successfully implemented flexible management of human resources, and the corresponding wireless communication and Internet of Things technologies have only received a large number of scholars in the past five years. Even though this paper uses statistical methods to analyze the flexible management schemes of human resources in various industries under the background of wireless communication and the Internet of Things and draws more credible conclusions, there are still many problems, which can be further studied in future research. The number of questionnaires was issued, and the content of the survey questions improved. In addition, because this paper mainly investigates the key influencing elements of human resources flexible management in various industries and does not provide specific surveys in the context of wireless communications and the Internet of Things, the overall survey data lacks key elements, factors and limitations. In the future, other machine learning algorithms can be used to analyze the data obtained from the questionnaire. For example, the K-means clustering algorithm can classify the obtained questionnaire data. In addition, the design of the flexible management scheme can be further expanded. Not limited to the direction of human resources, other management in various industries that can be further expanded.
Data Availability

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

Conflicts of Interest

The author declares no conflicts of interest.

References