Big Data Mining Method of Workplace Human Behavior Analysis for Enterprise Performance Acquisition

Dandan Wang
ShenYang Huimin Senior High School, ShenYang, China
E-mail: 23174992@qq.com

Abstract: At present, the behavior research of enterprise performance data has become the focus of current research, but there are still many problems in the reliability and accuracy of the data, and it involves extensive disputes such as privacy and predictability. Based on this, this paper studies the big data mining method of workplace human behavior analysis for enterprise performance acquisition, and constructs a behavior data observation system architecture integrating high-precision, all elements and multiple perspectives. This paper discusses the scale dependent characteristics of behavior change, the differentiation and integration of individual behavior and group behavior data, the definition of behavior data demand and individual privacy boundary, and the analysis, matching and integration of behavior data. This paper attempts to define the comprehensive collection and integrated processing of behavior data from the following aspects: boundary definition and data demand of scientific problems, multi-source data collection and integration method, multi factor behavior data analysis and integration method, and application driven behavior data application mode and approach. Finally, the experiments show that the big data mining method of workplace human behavior analysis for enterprise performance acquisition has high accuracy and effectiveness in the practical application process, which fully meets the research requirements.
Key words: enterprise performance; behavior analysis; data mining;

Tob Regul Sci. ™ 2022;8(1): 3628-3642
DOI: doi.org/10.18001/TRS.8.1.275

Introduction

In recent years, with the development of intelligent terminals, Internet of things and other technologies, the collection and analysis of individual behavior data has developed rapidly. Data driven behavior analysis is becoming the mainstream. Big data analysis technology makes the behavior patterns and rules of people hidden behind the data emerge[1]. Using massive behavior data to reveal the deviation of human behavior from Poisson process and its spatial scaling law characteristics greatly promotes the data-driven behavior analysis. Data driven behavior analysis can make a fundamental breakthrough and change in many fields of human society, such as politics, economic decision-making, public safety, public health and so on[2]. It has become one of the hot topics of behavior and even the whole human . Big data refers to a large number of different types of information continuously collected in the form of digital data, including

mobile tools such as smart phones and tablet phones, social network services such as microblog and wechat, and business management systems[3]. However, to transform big data into information beneficial to the company, there are three major problems: the data is mixed with redundant and invalid information, but the system processing capacity is limited, and the data needs to be filtered; the temporary data collection and analysis is not enough to support decision-making, and the solution must have sustainable data sources. In order to provide customers with valuable information, keep the data type updated. For the above problems, there are the following solutions: hire big data analysis experts, be responsible for the upper level decision-making, clear the direction[4]. At the same time, data processing and statistical analysis are distributed to extract effective data. Analysis experts should consider the actual situation of the business system and provide information technology solutions that can continuously monitor the key performance indicators. This paper briefly introduces big data analysis methods, big data analysis cases based on human behavior, and analyzes the feasibility of big data solutions for information technology business in the future.

1 Big data mining method for workplace human behavior analysis

1.1 Data collection of human behavior characteristics in workplace for enterprise performance acquisition

At this stage, the internal management of the staff data records are not comprehensive, which directly leads to the limitations of human resource management. Employee basic information and daily assessment records can not be used to accurately measure the value of talent and help talent management. In the modern human resource management mode, data analysis and processing can often provide scientific guidance for the actual management work and provide more reference for related human resource management work[5]. In the actual work process, data mining technology is used to effectively analyze employee compensation, and relevant suggestions and opinions are put forward from the perspective of cost control. The actual nature of human resource management is not only to manage and analyze the human resources of enterprises, but also to make timely response to the current situation of human resource allocation and management, with the function of experience summary. Using data mining technology can effectively analyze and summarize the age level of existing employees, scientifically analyze and reasonably judge the age structure of talents, so as to put forward reasonable suggestions on the age level of management talents in the process of management, and optimize and adjust the position in line with the age structure of employees in the process of talent management[6]. It can also effectively analyze the demand of human resources and the supply of human resources market through data mining technology, and predict the development trend, so as to formulate the talent management and allocation, training and development plan in line with the current situation of enterprise development[7]. In the era of big data, people's behavior patterns have controllable collection patterns, but how to define, refine and integrate the relevant data according to the core issues and boundaries of research is still a key problem to be clarified. Considering the discipline requirements, data characteristics, collection means and application requirements of behavioral science, and following the basic main line of behavioral cognition system basic research system functional support system law and application system, the overall framework of human behavior research in the era of big data is constructed.

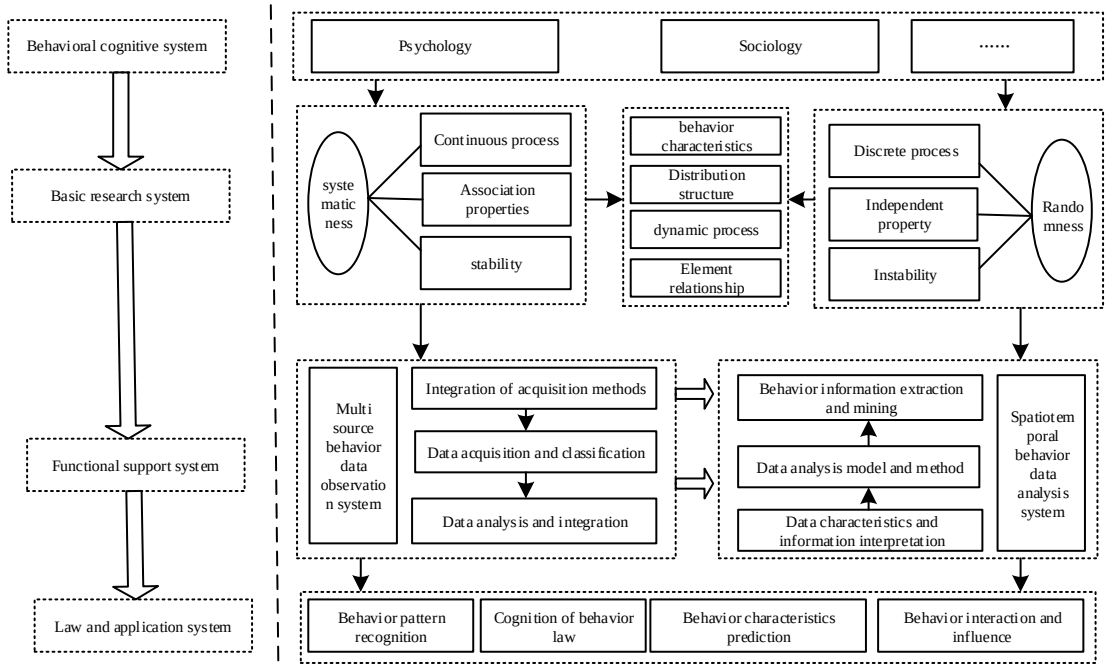

Fig. 1 The general framework of human spatiotemporal behavior research

From the perspective of behavior research framework, data observation system is an important part of behavior research paradigm and plays a key role in human behavior analysis. Specifically, cognitive system and research paradigm are the common theoretical basis of time , behavioral , sociology, psychology and other disciplines, and are also the discipline requirements of data observation system[8]. The behavior characteristics, distribution structure, dynamic process and element relationship discussed by basic research system are the core topics of behavior science and the key entrance of data observation system. The behavior pattern recognition, law cognition and feature prediction of law and application system are important parts of connecting theory and practice, and play the main export of data observation system. As the leading link between the entrance and exit, the "functional support system" is composed of data observation system and analysis system, and the observation system is also the basic premise of whether the analysis system can be realized[9]. The internal relationship between the above systems provides evidence and basis for the establishment of a complete behavior data observation system[10]. Therefore, from the perspective of scientific cognition, following the idea of organic integration of certain paradigms to construct the framework of behavior data observation system can effectively support the establishment of scientific paradigm of human behavior research. The main purpose of human behavior data collection is to build a complete behavior data observation system of continuous scale sequence and comprehensive attribute elements[11]. According to the basic idea of "determination of information acquisition methods integration of information acquisition methods division of information types information analysis and element extraction behavior attributes and element integration", the overall framework of human behavior data observation system with hierarchical structure is constructed.

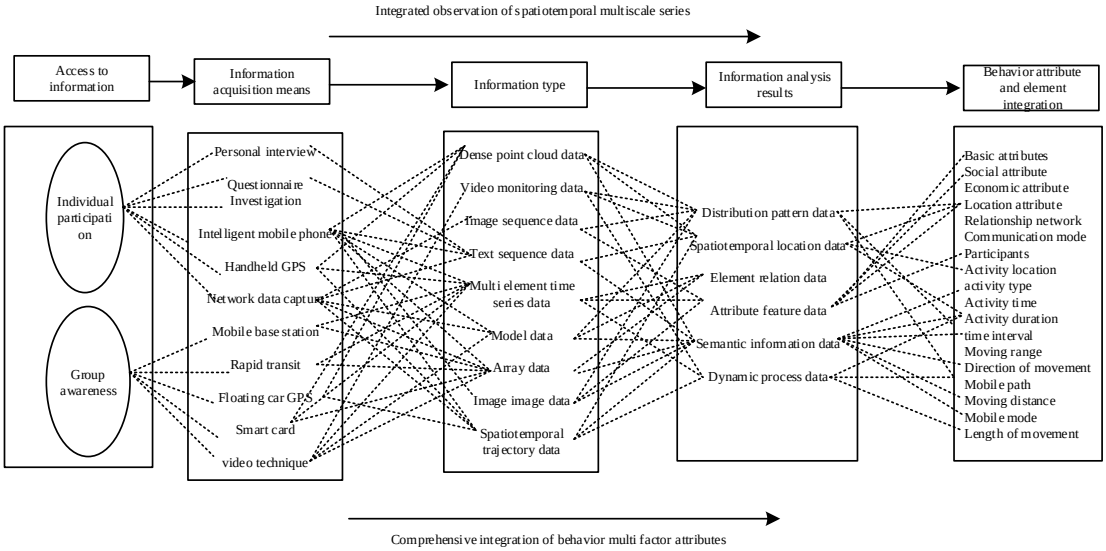

Fig.2 Architecture of human behavior data observation system

Continuous acquisition contains different types of information such as trajectory data, dense point cloud data, video monitoring data, image sequence data, text sequence data, multi factor time sequence data, array data, pattern data and image image data[12]. Then the mapping rules between information types and behavior attributes are established to analyze and extract element information such as location data, distribution pattern data, semantic information data, attribute feature data, dynamic process data and element relationship data. On this basis, the feature attributes, activity attributes and movement attributes of behavior are associated, matched and integrated, so as to realize the comprehensive observation of multi-scale sequence and the comprehensive integration of multi-element attributes of behavior[13]. The whole chaotic optimization process of K-means algorithm can be represented as a graph.

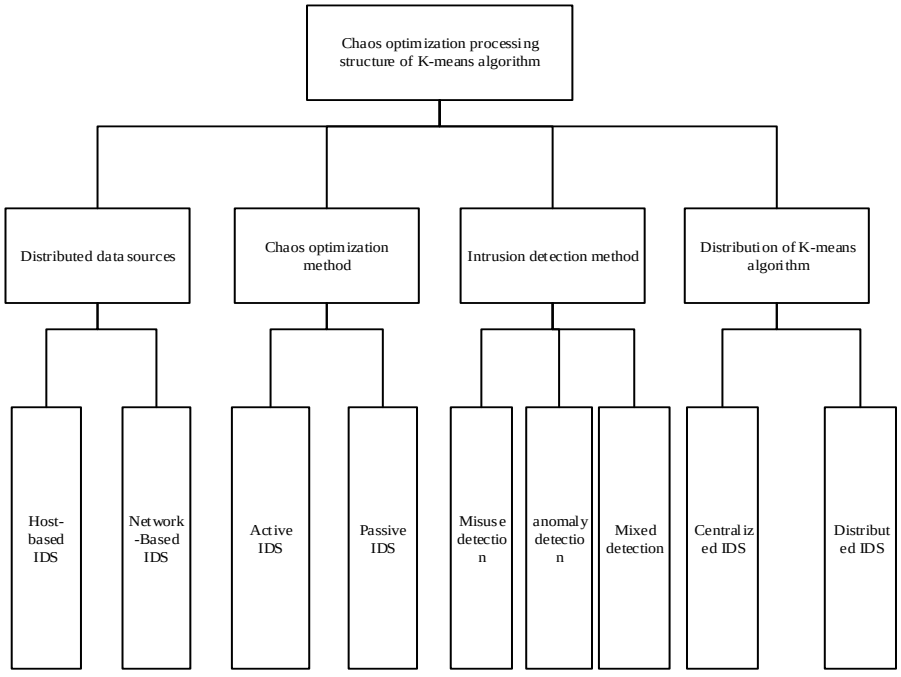

Fig. 3 Structure chart of human behavior characteristic data optimization processing

Feasibility test can reveal the relationship between business value and data analysis results, while big data analysis can improve the efficiency of feasibility test. The feasibility test includes the following four steps: establishing effective information[14]. Data experts work with customers to define requirements. For example, research customer satisfaction based on social media reviews or goodwill analysis, or improve plant and equipment utilization through regularly maintained data. Identify scenarios for using big data. Based on a thorough understanding of the customer's business, develop research hypotheses: for example, assume the type of input data and data processing technology, estimate the possible results of data analysis, and how to apply the conclusions to the company's marketing activities[15]. Feasibility test. The purpose of feasibility test is to verify whether the analysis of big data can deliver valuable knowledge conclusions according to the effective information. System implementation. The work of data mining will be gradually transferred from data analysis experts to system implementation personnel, and the system implementation will be carried out according to the process of development, testing, installation and operation[16]. In the human resource management of enterprises, it is also one of the important work items to formulate a perfect salary system and assist the salary design of employees, which is of great significance to ensure the interests of enterprises and the effectiveness of human resource work. In the traditional data management, the lack of big data as the basis of performance evaluation leads to the lack of rationality of salary design, which deviates greatly from the expected salary target of employees. The accurate application of data mining technology can effectively improve this situation[17]. The content of human resource performance appraisal is very rich, including learning ability, working ability, professional quality, personal moral cultivation and many other aspects. The excavation and analysis of relevant data can clearly affect the specific factors of salary design, extract the effective reference basis of salary design, and facilitate the system[18]. At the same time, it helps to clarify the salary expectations of different positions of employees or job seekers, which is conducive to the accurate management and management of enterprise human resource management and saves related costs.

1.2 Optimization of human behavior analysis algorithm in workplace of enterprise performance

The development of social economy brings opportunities and challenges to the development of enterprises. Enterprises must take effective management means, especially the management method of human resources, so as to improve their competitiveness. At this stage, with the era of big data, the management of human resources of enterprises gradually uses the management method of "mining" of big data, through the management of huge and fragmented data[19]. According to the realization of scientific and effective extraction and analysis, to produce greater management wisdom and value, to provide decision-making reference for enterprise human resource management, to adapt to the changes of the times, and to innovate the means and methods of human resource management are the biggest challenges and opportunities faced by enterprise human resource managers in the era of big data, and also the key for enterprises to maintain competitiveness in the fierce market competition[20-21]. Original data refers to the data type that can reflect the basic situation of employees, which has the characteristics of personalization. The original data is the record of employees' growth background, education experience, living environment and other basic conditions, so as to judge the personal quality of employees. Competency data is a reflection of employees' working ability. The human resource

management department of an enterprise can analyze the employees' training experience, training assessment status, problem-solving efficiency and so on, and then establish the personal ability data of employees to help managers reasonably analyze the employees' working ability, so as to reasonably allocate jobs and ensure the enthusiasm and enthusiasm of employees. The efficiency data of employees is the direct basis for human resource management department to judge the work effect of employees. The efficiency data includes: the efficiency of task realization, the end time of single task, the rate of defective parts, etc., so as to reasonably grasp the work efficiency of employees, and scientifically formulate the talent training plan according to the work efficiency of different talents. Potential data can help human resources department analyze employees' career development prospects reasonably, so as to promote their self-worth. Human resources department in the reasonable analysis of employees' career planning, career needs and other data, establish the potential data of employees, so as to scientifically plan the career promotion of employees, reasonable development path of employees and so on, so that employees can give full play to their ability, improve their work enthusiasm, so as to improve the competitiveness of the enterprise. K-means algorithm is a distance based clustering algorithm, also known as fast clustering, which is widely used in scientific research and industrial and commercial applications. Select k points as the cluster center (centroid), and then close the sample to the nearest distance from it to form the initial classification, and then recalculate the cluster center, cycle iteration until the cluster center no longer changes. K-means is essentially a generation greedy algorithm, the biggest advantage is fast and simple, through multiple generations until the cluster center no longer changes, because the clustering variables processed by K-means method are continuous numerical data sets, it uses Euclidean distance to define the similarity, That is to say, the Euclidean distance between data sample points a and *B* is the square root of the sum of squares of the differences of one attribute value of two points. The purpose is to calculate the overall distance between two points, that is, the dissimilarity. Its mathematical definition is:

$$\mathrm{D}(a,b)=\sqrt{\sum_{i=1}^{t}\left(a_i-b_i\right)^2} \quad (1)$$

Where a_i is the ith attribute value of point a and b_i is the ith attribute value of point b. Information entropy is a quantitative measure of the amount of information, which is expressed by the mathematical expectation of the amount of information, and represents the average uncertainty of information dissemination. The information entropy with high amount of information is low, on the contrary, the information entropy with less amount of information is higher, which is defined as information entropy

$$\mathrm{Ent}(U)=\mathrm{D}(a,b)-\sum_{i}P\left(u_i\right)\log_2 P\left(u_i\right) \quad (2)$$

The information measurement value of the transmitted signal U obtained by the receiver after receiving the characteristic behavior data. Since the received signal V is a random variable, the expectation of posterior entropy is zero.

$$\mathrm{Ent}(U|\ V)=-\sum_{j}P\left(v_j\right)\left(\sum_{i}P\left(u_i|\ v_j\right)\log_2 P\left(u_i|\ v_j\right)\right) \quad (3)$$

P is called conditional entropy:

$$\text{Gains}(U,V) = \text{Ent}(U) - \text{Ent}(U/V) \quad (5)$$

The formula of information gain rate is as follows:

$$\text{Gains}\,R(U,V) = \text{Gains}(U,V) / \text{Ent}(V) \quad (6)$$

The occurrence probability of classification attribute C_j is further calculated

$$P(\text{C}) = |\,\text{C},|\,/\,|\,\text{S}\,| = \text{freq}\left(\text{C}_j\,\text{S}\right)/\,\text{S} \quad (7)$$

The occurrence probability of attribute $R=r_i$ is as follows:

$$P\left(\text{R}_i\right) = |\,\text{S}_j\,|\,/\,|\,\text{S}\,| \quad (8)$$

In the example of attribute $R=r_i$, the conditional probability with classification attribute C_j is as follows:

$$H\left(C_j|\ r_i\right) = \left|C_{jr}\right|/|S_i| \quad (9)$$

The information of classification attribute is as follows:

$$\begin{aligned} H(C) &= -\sum_j p\left(C_j\right)\log_2\left(P\left(C_j\right)\right) \\ &= -\sum_j \frac{freq\left(C_j,S\right)}{|S|}\times\log_2\left(\frac{freq\left(C_j,S\right)}{|S|}\right) \\ &= \inf o(S) \end{aligned} \quad (10)$$

The set S is divided according to the attribute R. the condition of the divided classification attribute is as follows:

$$\begin{aligned} H(C|\ R) &= -\sum P\left(r_i\right)\sum P\left(C_j|\ r_i\right)\log_2 P\left(C_j|\ r_i\right) \\ &= \sum_{i=1}^{n}\frac{\left|S_j\right|}{|S|}\times\inf o\left(S_i\right) \\ &= \inf o(S) \end{aligned} \quad (11)$$

The information gain algorithm is as follows.

$$\begin{aligned} I(C,R) &= H(C) - H(\text{C}|\ \text{R}) \\ &= \text{int}\,o(\text{S}) - \inf\,\text{ov}(\text{S}) \\ &= \text{gain}(\text{R}) \end{aligned} \quad (12)$$

Information of attribute R is:

$$H(R)=\sum_{i}P(r_1)\log_2\left(P(\mathrm{r}_1)\right)$$
$$=-\sum_{i=1}^{n}\frac{|S_i|}{|\mathrm{S}|}\times\log_2\left(\frac{|\mathrm{S}_i|}{|\mathrm{S}|}\right) \quad (13)$$
$$=split\inf o(\mathrm{R})$$

Enterprise performance is usually evaluated from four aspects, including profitability, growth ability, solvency and operation ability. The main portals for investors to obtain information will also clearly give these four aspects of financial indicators. Combining with the principle of enterprise performance evaluation, the author comprehensively compares and selects the following 17 financial indicators that investors can easily obtain. Profitability refers to the enterprise's capital or capital appreciation ability, which means that the enterprise has a strong ability to obtain cash flow. Profitability reflects the management efficiency and business performance of operators, and is also an important basis for investors or creditors to make investment decisions. Whether investors, creditors or professional managers, as well as the expanding stakeholder groups attach great importance to and care about the profitability of enterprises. The main indicators to measure the level of corporate profitability are profit rate of sales, return on total assets, return on assets, profit rate of main business, earnings per share, net assets per share, return on net assets, return on net assets, net profit / gross operating income, etc. Inventory turnover rate refers to the turnover rate of means of production, semi-finished products and finished products stored for sale. The inventory management of an enterprise is related to the normal production and operation of the enterprise, which has always been the focus of attention and analysis of entrepreneurs and investors. The formula is: inventory turnover (Times) - sales (operating) cost + average inventory. The liquidity of inventory will directly affect the current ratio of the enterprise. Liquidity is the inventory turnover rate. Generally speaking, the higher the inventory turnover rate, the better. Based on this, the financial performance behavior evaluation index system is constructed as follows:

Table 1 Financial performance behavior evaluation index system

Profitability	Return on net assets, earnings per share (diluted at the end of the period), net assets per share, return on net assets, net profit / gross operating income
Solvency	Current ratio, equity ratio, total shareholders' equity / liabilities, asset liability ratio
Growth ability	Earnings per share growth rate, operating revenue growth rate, net asset growth rate, net profit growth rate, total asset growth rate
Operating capacity	Inventory turnover rate, total assets turnover rate, shareholders' equity ratio, accounts receivable turnover rate

Asset liability ratio is the proportional relationship between total liabilities and total assets, which is used to measure the level of liabilities and the degree of risk. This index represents the proportion of the assets provided by creditors in the total assets of an enterprise. Whether the value is reasonable or not should be analyzed from the perspectives of creditors, shareholders and operators. Creditors should consider the degree of risk of providing credit funds to the enterprise. Shareholders should consider that when the profit rate of total capital is higher than the interest

rate of loans, the greater the proportion of liabilities, the better, and operators should consider Operating efficiency and going concern. The asset liability ratio is expressed by the formula: asset liability ratio = (total liabilities x total assets) x 100%. Earnings per share refers to the ratio between the net income of an enterprise and the number of ordinary shares in circulation. Calculating the after tax profit created by each share is the most basic and important index to evaluate the profitability of a listed company. The formula is as follows: basic earnings per share = current net profit attributable to common shareholders - weighted average of current circulating common shares. We can use this index to compare companies. The higher the value of earnings per share, the better the profitability. Return on equity refers to the ability to use its own capital to obtain profits. It is an important profitability index, which can show the efficiency of the company's use of the capital invested by shareholders. It is expressed by the formula: return on net assets = net profit after tax and owner's equity (average net assets). The more reasonable value of the index is 7% for three consecutive years. The higher the index value is, the stronger the enterprise's operating profitability is and the more capable it is to obtain capital appreciation. That is to say, the enterprise owners have achieved better economic profits through capital investment, the stronger the capital's ability to obtain profits, and the greater the shareholder value of the enterprise. On the contrary, the weaker the profitability of enterprises.

1.3 Implementation of data mining for human behavior analysis

Through the use of big data mining management, enterprise human resources can understand talents from different aspects, such as the performance of personal social networking sites, and then judge whether talents are suitable for enterprise management requirements, ensure the quality of enterprise talent management, and promote the improvement of human resource management level. Based on cloud technology, big data directional mining and analysis are used to help enterprises establish and find a radar system suitable for talents. That is, a recommendation platform is built through data collection and online analysis to form a complete analysis of point, line and surface, and then data is used to search for talents. Enterprise human resources in the use of big data mining for management, can fully analyze the relationship between behavior and results, so as to get the relevant laws. For example, when enterprise managers allocate positions, they can judge what kind of people are suitable for what kind of positions and what kind of people can create high benefits according to the analysis results. The original data collected from the network can not be directly applied to the analysis method, because the original data contains a lot of redundancy and noise, and the format of the original data also needs to be transformed according to the analysis method and analysis target, which requires data preprocessing, removing redundancy and noise, and transforming the data into a reasonable input format. There are many methods of user behavior analysis, including statistics and data mining. In practical application, we need to choose a reasonable method according to the analysis goal and data situation. In the process of analysis, it is difficult to determine the method, so it needs to be repeatedly evaluated and adjusted to achieve the optimal analysis results. Common methods and application scenarios in user behavior analysis are shown in the table.

Table 2 Common analysis methods and application scenarios

User behavior analysis method	Application scenarios
statistical analysis	Study the basic characteristics of data, such as mean, variance, distribution, etc
cluster analysis	A group of objects without prior knowledge are divided into different clusters according to the similarity, so as to find the natural rules in the data.
Analysis of association rules	Find the correlation between attributes, and get association rules from attributes.
temporal data mining	Using historical time series data to predict the value of future data or the trend of data change.

In terms of the overall process, after data collection, data preprocessing, method selection and method evaluation are the three most important steps in the process of user behavior analysis. Whether these three steps can be reasonably implemented will directly affect the success of the analysis goal. Therefore, we should pay special attention to these three steps in the process of user behavior analysis. The overall process of user behavior analysis is as follows:

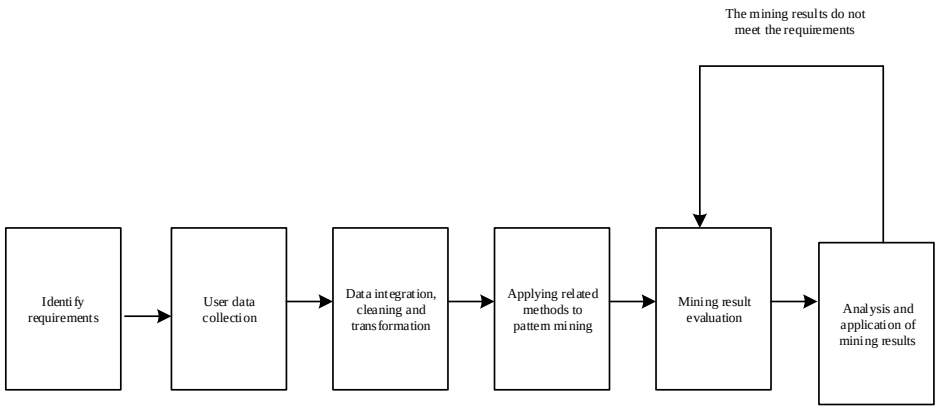

Fig. 4 Overall process of user behavior analysis

Data preprocessing refers to the process of data cleaning, conversion and compression. In the real world, the data are often incomplete and noisy, and the high-quality analysis results often rely on high-quality data. In order to improve the quality of data, it is necessary to clean up the noise in the data and supplement or delete the incomplete data. Although the original data contains the information needed for analysis, due to the structure and form, the original data can not be processed For the direct input of analysis, it is necessary to transform the original data to obtain the available analysis data; in addition, in the case of a large amount of data, it is necessary to specify the irrelevant or weakly related data. If the amount of data after the specification still can not meet the analysis needs, data sampling or data discretization can be carried out. Attribute normalization limits the value range of data attribute to [0,1]. If $x$max is the maximum value of the attribute, the attribute value x is converted as follows:

$$x' = x / x_{\max} \quad (14)$$

If x is the mean value of the attribute value and S_x is their standard deviation, the attribute

value x is converted as follows:

$$x' = (x - \bar{x}) / s_x \quad (15)$$

Human resource management can not only make effective decisions, but also establish a database to monitor the specific situation of talents in real time. The judgment of high-performance talents needs four aspects of decision-making, namely: resume data, one year's performance data, talent's working time utilization and efficiency, and talent's dynamic in the social circle. In the human resource management of enterprises, the key part is to fully understand the characteristics of different talents, and then allocate the corresponding positions. More and more enterprises have relied on the means of big data mining to establish accurate human capacity model, so as to analyze the characteristics of different talents from many aspects and improve the management level of human resources. At the same time, the enterprise managers should clearly understand the internal talent structure and quality of the enterprise, as well as the specific situation of various positions in the enterprise, so as to ensure the optimization of personnel allocation. In addition, big data mining can help enterprises conduct dynamic analysis when managing talents, and the talent management plan can be completed with quality and standard. The relationship between enterprises and employees is also important. In reality, employees generally have expectations of themselves. At this time, enterprises should do a good job in the reward management of employees, including: labor treatment, welfare treatment, spiritual incentive, etc., in order to improve the enthusiasm of employees. Enterprise human resource managers can analyze employees' performance through big data mining, and set evaluation indicators on the basis of performance analysis. In addition, the use of big data mining can analyze the employees' own situation, such as learning background, growth environment, judge the needs of employees, ensure that employees have a sense of respect and self-worth realization in the enterprise, so as to improve the recognition of employees to the enterprise.

2 Analysis of experimental results

Two computers with the same configuration are used as the experimental objects. The experimental group is equipped with depth mining method, and the control group is equipped with SDN tagging principle. A network device with high stability is selected as the monitoring subject, and the specific changes of the influence parameters of the experimental group and the control group are recorded in the given detection time. The experiment is carried out on a PC with Windows XP system, dual core CPU with main frequency of 2.400gb memory and hard disk, data is stored in the database, the amount of data is 158mb, the algorithm is written in C++ language, and the development environment is VC++6.0.

Table 3 Simulation Environment

Name	Simulation parameters
operating system	Windows7
Memory	16GB*8
Machine configuration	CPU2.20GHz
Experimental tools	SQL2007 database，VBScript
development environment	Jbuilder,Xmlwriterv2.11

development language	Java,XML,XSL

Further, $a_{\min}$ is used to represent the minimum distance between clusters to record the clustering changes of behavior data features, as shown in the figure.

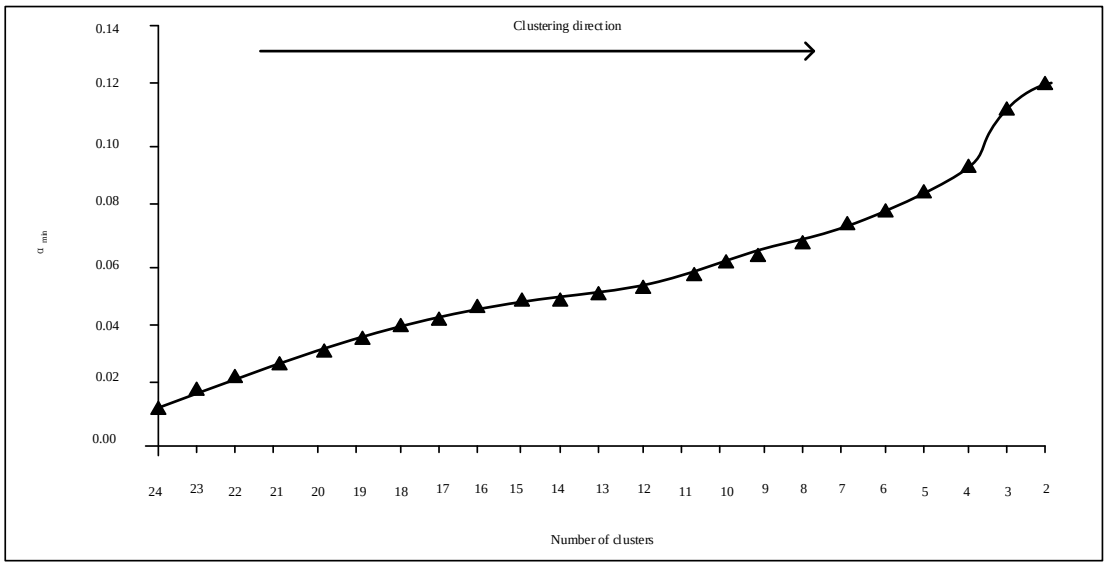

Fig. 5 Clustering changes of behavior data features

Since there is no abnormal data in the collected records, in order to make the experiment comparable, five typical attacks are extracted as the experimental data of this model, as shown in the following table.

Table 4 Abnormal data samples

Attack type	Selected attacks in experiments	Number of abnormal samples
Dos	Neptune	24225
Probing	PortsWeep	62551
	Statan	36641
DDos	Buffer-overflow	82565
R2L	Guess-passwd	36550

Taking 60min as the monitoring time, the specific changes of the total capacity of big data nodes were recorded in this period after the application of the experimental group and the control group. There are three obvious inflection points, corresponding to 4, 9 and 12 respectively. Considering the selection factor of the number of clusters, it is considered that clustering 4 groups is more appropriate. The cluster time distribution vector represents the arithmetic mean value of the user time distribution vector in the cluster

$$C = \frac{\sum_{U \in C} U}{k_C} = \frac{\sum_{V \in C} kV}{\sum_{V \in C} k} \quad (16)$$

The data to be mined in the experiment is divided into two categories, namely normal behavior data and abnormal behavior data. Generally, there are four kinds of results in the results of behavior data mining, as shown in the following table.

Table 5 Data classification table

Classification	Actual normal data	Actual abnormal data
Method to mine the normal data	TP	FP
Method to mine the abnormal data	FN	TN

TP indicates that both the real class of data samples and the class mined by the method are positive classes;

FP represents the real class of the data sample and the class mined by the method is negative class and positive class respectively;

FN represents the real class of the data sample and the class mined by the method is positive class and negative class respectively;

TN indicates that the real class of the data sample and the class mined by the method are both negative classes;

According to the above indicators, the fl score value is obtained. This value is the comprehensive result of accuracy and recall. The higher the value, the better the quality of data mining.

$$\mathrm{Fl-score}=\frac{2\cdot \mathrm{Re}\,call\cdot precision}{\mathrm{Re}\,call+precision} \quad (17)$$

Among them:

$$\mathrm{Pr}\,ecision=\frac{TP}{TP+FP} \quad (18)$$

$$\mathrm{Re}\,call=\frac{TP}{TP+FN} \quad (19)$$

Under the same conditions, we use the three traditional methods to compare the results of human behavior data mining, and compare with the results of the method mining. The results are shown in the following table.

Table 6 Data mining quality analysis

Index	Research methods	traditional method 1	traditional method 2	traditional method 3
Fl-score	0.852	0.784	0.771	0.763

It can be seen from the table that using the research method for accurate mining of human behavior data characteristics in the workplace can better guarantee the effect of data mining and improve the quality of data mining, which shows that the mining quality of the research method is better.

3 Conclusions

In recent years, enterprises have changed in value reform and innovation, and provide customers with solutions with big data analysis services through data analysis capabilities obtained from enterprise performance. Combined with the method of big data analysis, this

paper studies the feasibility of new information technology solutions, looks for human unconscious behavior model, identifies the opportunities or risks hidden behind the results, ensures the accurate mining and analysis of human behavior data in the workplace, and ensures the effect of data processing.

Reference

[1] Lu Y , Xu R . The effect of characteristics differences in vertical pair of executives and equity incentives on enterprise performance[J]. MATEC Web of Conferences, 2021, 336(1):09009.
[2] Yang H , Chen W , Hao Y F . Supply chain partnership, inter-organizational knowledge trading and enterprise innovation performance: the theoretical and empirical research in project-based supply chain[J]. Soft Computing, 2020, 24(9):6433-6444.
[3] Lu Y , Pan T . The Effect of Employee Participation in Enterprise Social Media on Their Job Performance[J]. IEEE Access, 2019, PP(99):1-1.
[4] Pan X , Han C , Song M , et al. The Impact of Information Technology Investment on the Performance of Apparel Manufacturing Enterprises: Based on the Moderating Effect of Equity Concentration[J]. IEEE Transactions on Engineering Management, 2020, PP(99):1-9.
[5] Howe W T , Bisel R S . Third-party online organizational reviews: Explaining review-and-rating patterns of the United States Military and large corporate organizations[J]. Computers in Human Behavior Reports, 2020, 1(1):1-8.
[6] Mitchell B . Corporate Cyberespionage: Identification And Prevention Part 2[J]. EDPACS the EDP audit, control and security newsletter, 2020, 62(6):1-14.
[7] Dahlmann F , Stubbs W , Griggs D , et al. Corporate actors, the UN Sustainable Development Goals and Earth System Governance: A research agenda[J]. The Anthropocene Review, 2019, 6(1-2):167-176.
[8] Zaichenko Y O . The Current State of Human Resources Management at Enterprises: Challenges and Prospects[J]. Business Inform, 2020, 11(514):436-441.
[9] Palanikumar K , Subbiah V . Bio Caryota Fiber Reinforced Polymer Composites: Mechanical Properties and Vibration Behavior Analysis[J]. Journal of Bionic Engineering, 2019, 16(3):480-491.
[10] álvar, Mayor, Mario, et al. Commutation Behavior Analysis of a Dual 3L-ANPC-VSC Phase-Leg PEBB Using 4.5-kV and 1.5-kA HV-IGBT Modules[J]. IEEE Transactions on Power Electronics, 2019, 34(2):1125-1141.
[11] Sandri C , Melo C E A D , Giusti L A , et al. Preferential solvation index as a tool in the analysis of the behavior of solvatochromic probes in binary solvent mixtures[J]. Journal of Molecular Liquids, 2021, 328(80):115450.
[12] Shaban O S , Al-Hawatma Z , Abdallah A A . Mergers and acquisitions in Jordan: Its motives and influence on company financial performance and stock market price[J]. Corporate Ownership and Control, 2019, 16(2):67-72.
[13 Barbin N M , Dan V P , Terentyev D I , et al. Comparative Thermodynamic Analysis of the Behavior of C60 and C28 Fullerenes when Heated in an Inert Medium[J]. Key Engineering Materials, 2020, 854(11):151-157.
[14] Eleti R R , Stepanov N , Zherebtsov S . Mechanical behavior and thermal activation analysis of HfNbTaTiZr body-centered cubic high-entropy alloy during tensile deformation at 77K -

ScienceDirect[J]. Scripta Materialia, 2020, 188(7):118-123.
[15] Yamaguchi Y , Nakaoka S , Hayashi T , et al. (Invited) Molecular Dynamics Analysis on the Behavior of Water and Alcohol Liquids on a OH-Terminated SiO2 Surface[J]. ECS Transactions, 2019, 92(2):87-94.
[16] Sayal K , Singh G . What Role Does Human Behaviour Play in Corporate Frauds?[J]. Economic and political weekly, 2020, 55(26-27).
[17] Massie H . Remove the Guesswork of the Human Behavior Behind Corporate Governance[J]. Board Leadership, 2019, 2019(164):1-8.
[18] Iriondo I , Montero J A , Sevillano X , et al. Developing a videogame for learning signal processing and project management using project-oriented learning in ICT engineering degrees[J]. Computers in Human Behavior, 2019, 99(OCT.):381-395.
[19] Camino Ramon-Llorens M , Garcia-Meca E , Consuelo Pucheta-Martinez M . The role of human and social board capital in driving CSR reporting[J]. Long Range Planning, 2019, 52(6):101846.1-101846.17.
[20] Li H , Zhang K , Cheng H , et al. Multi-stage mechanical behavior and failure mechanism analysis of CFRP/Al single-lap bolted joints with different seawater ageing conditions[J]. Composite Structures, 2019, 208(JAN.):634-645.
[21]Mayahi S , Yamchi A , Golalipour M , et al. Data Mining for Identification of Forkhead Box O (FOXO3a) in Different Organisms Using Nucleotide and Tandem Repeat Sequences[J]. Research in Molecular Medicine, 2020, 8(1):17-30.