# A Study on the Transformative Effects of Artificial Intelligence Technology on Human Resource Management Models

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***Abstract:*** *With the spread of artificial intelligence technology, the way traditional management in human resources management has been carried out is starting to change gradually. In line with the development logic of "deconstruction-transition-evolution", this paper will present the whole development process of artificial intelligence technology in human resources management systems. First, deconstruction refers to the movement of the boundary of algorithmic decision-making; second, it is the trend of disaggregation in job analysis; third, it is the mechanism of performance weight redistribution. Second, at the level of transition, this paper elaborates on the morphological reconstruction of management models from linear processes to dynamic networks, the migration path of managerial authority in human-machine collaboration, and the logic for setting elastic thresholds based on real-time data stream feedback. Finally, in terms of development, this paper has found that the matching accuracy of automated recruitment improves nonlinearly, there is a knowledge emergence effect due to intelligent recommendation systems, and there is a correction mechanism for turnover prediction models in human capital retention curves. In short, based on the above theoretical deduction, it can be concluded that AI technology will not only add to the existing functions of human resources management but will also change the internal logic of management models through a three-stage process of deconstruction, transition and evolution. Hopefully, this paper will provide some practical theoretical ideas and an analysis system for the subsequent empirical studies.*

***Keywords:*** *Artificial Intelligence Technology, Human Resources Management, Deconstruction Logic, Morphological Transition, Efficiency Evolution*

## Introduction

For a long time, the model of human resources management has not been fully digitised, and it has been slow to respond and inflexible. The old model of fixed job descriptions, regular evaluations and linear process design are no longer suitable for the changes in organisational work at present. As artificial intelligence has developed over the years, so too have we. Algorithmic decision-making, data-driven analysis, human-machine collaboration, real-time feedback regulation, and so on are all different kinds of management links in which intelligent systems exercise regulatory power, and they are not the same as those of traditional tools. Research on the changes in human resources management due to the development of artificial intelligence technology can help to clarify the boundary between technological substitution and that of human judgment, provide theoretical support for building flexible management systems in organisations, etc. The three stages of this study are the "algorithmic substitution boundary", the "morphological transition of models", and the "efficiency evolution", and they have a logical relationship of progressive layering and sequential driving: First, technology deconstructs the old management modules; Next, this deconstruction results in a morphological change; Finally, as a result of this change, there is a nonlinear development in efficiency. Based on the above progress, this paper will address the shortcomings of the current theories of dynamic management situations.

## 1. Deconstruction Logic of Artificial Intelligence Technology in Human Resources Management Models

### *1.1 Substitution Boundaries of Algorithmic Decision-Making in Human Resource Management Modules*

Not all links in the chain of responsibility for human resources management are suitable for automation. The division of substitution areas is based on how formally the task rules are written and how clear the feedback loop is. For instance, in the first organised module of resume screening, there is a relatively fixed mapping relationship between the input and the output of the abnormal attendance detection and the standardised test scores. Train a classifier or a regressor with the old data, and then automatically get the new predictions. Machines do not know about the world and do not have tacit knowledge in unstructured situations; therefore, they cannot make value judgments or handle complex negotiations and usually only provide additional suggestions at the substitution boundary. That is to say, for problems that have a known foundation of judgment, algorithms can be employed; however, many tasks still require human intuition and experience, and these cannot be directly replaced by technology at present[1].

The other bound on the movement of substitution is the degree of technological development and organisational acceptance. On the one hand, although deep learning has achieved good prediction accuracy, it is a "black box", and without interpretability, it is difficult to win people's trust in the important decisions made by algorithms, such as recruitment and hiring recommendations. At the same time, the perceived fairness of the managed subjects (employees) in light of the algorithm's decision will also affect the actual position of the boundary. If the employees believe that the algorithmic scores are too impersonal and do not believe there is an appeal path, then the company will reduce the weight of the algorithm. Therefore, the substitution boundary is not a fixed straight line but a fuzzy region that changes gradually with the level of technological transparency and public trust.

### *1.2 Discretisation of Job Analysis and Allocation Rules Based on Data-Driven Methods*

The old way of job analysis is to list the duties of a certain post, and a job description is usually updated only once a year or less. Based on the accumulated records of tasks, communication logs, project progress at various times, etc., an intelligent system can divide the total responsibilities of the original system into a series of small tasks. The different departments have various skill requirements, and different weights are given to the time investment and collaborative nature of the work; thus, a position is no longer a single, fixed title but rather a set of dynamically combined task clusters. Therefore, the allocation rule will be changed from "person-job matching" to multi-dimensional "person-task-scenario" matching, and the proportion of personnel input for different tasks can be adjusted according to project cycles or even weekly.

As a result of this division, the division of labour is less rigid and people have taken on more responsibilities. Although the official title of a person is "Data Analyst", in practice, they are also responsible for many other tasks such as data cleaning and visualisation report creation, coordination of user research, etc., and occasionally some light development work. The old rule of a fixed organisation chart is no longer applicable; according to the current working conditions and skills of the staff, an algorithm will automatically generate the allocation plan. In a sense, the company has now become more of a "task market", and employees move among various tasks; thus, job analysis has become an ever-changing repository of competency labels. The first is that it is too general; the second is that employees do not know which category they belong to, so the performance appraisal will not be in line with their actual work content.

### *1.3 Redistribution of Weights in Traditional Performance Evaluation by Intelligent Systems*

Traditionally, there are only a few fixed indicators for performance evaluation: sales volume, lines of code and customer satisfaction; the manager then scores each item and calculates a weighted total. Intervention by intelligent systems has changed how weight assignment is done; it is no longer based on the subjective judgment of managers or old standards but is automatically adjusted according to the statistical correlation of actual business results and behaviour data. For instance, if the system finds that the retention rate of customers is closely related to two factors, namely the response time of after-sales service and certain keywords in conversation scripts, it will automatically increase the weights of these two indicators in the evaluation of customer service staff and reduce the weight of the original

dominant indicator of call duration. The distribution is not fixed and may be different at different times in the same assessment period[2].

The other type of distribution of weight is a trade-off between fairness and interpretability. The best weights that an algorithm finds over the whole dataset may not be suitable for any particular individual. An employee may have been wrongly disciplined because of noise in the aggregated data of their team; for instance, the system increased the weight of the collaboration frequency index, but this particular employee does independent research and has very little collaboration. Managers have been able to make some unplanned adjustments based on their past experiences, but now the intelligent system must strictly follow statistical rules and cannot be changed. Therefore, many organizations have started to use a hybrid model in practice: "algorithmic recommendations and managerial final approval"; that is to say, the system will calculate the recommended weights, but a manager can still change them. Based on the above analysis, we will first narrow down the range of human judgement[3].

## 2. Morphological Evolution of the Human Resources Management Model Based on Artificial Intelligence Technology

### *2.1 Mode Reconstruction from Linear Processes to Dynamic Networks*

The traditional model of human resources management is a series of recruitment, training, induction, performance appraisal and promotion; generally speaking, there is a chronological order and a top-down approval chain among these links. The Design Goal of Linear Process is stability and controllability, but it will be too slow to respond to changes in the business environment. Many of the old problems in artificial intelligence technology have been addressed to some extent so far, and now an intelligent scheduling system can ignore the original order based on changes in real-time requirements for a task and directly link the training and evaluation of performance data. For example, behaviour data obtained about an employee during the course of a project can be used to assess their ability and recommend training; thus, the results of this evaluation are not the end goal but serve as the foundation for the next stage of work. The whole structure is no longer a single-lane road; instead, it is a complex network of connected nodes, and according to business needs, the number and direction of connections among these nodes can be flexibly changed[4].

The Dynamic Network Model has changed the original ideas of management. The previous linear mode was that the information would be passed down the hierarchy and decisions would be made at the top. The network structure is that any task unit can be temporarily connected to several capability units, and the flow of information does not need to be along a single path. Therefore, the idea of human resources management has changed from "designing processes" to "maintaining network health"; that is to say, it is no longer about ensuring that all links meet the original plan, but rather about improving the response speed of nodes, adding redundant links, distributing the load among key nodes, and so on. The first assembly-line model of human resources has now been replaced by a large, irregular spider web of all kinds connected to various demand points.

### *2.2 The Migration Path of Managerial Authority in Human-Machine Collaborative Architectures*

The structure of collaborative human-machine resource management is not uniform; instead, as it has developed from "machines helping people" to "people managing machines" and finally to "dynamic division of labour", so too has its structure changed. Initially, the intelligent system will be in charge of the low-risk operations, such as data collection and processing, report generation, etc., and the manager will still make the final decision at this time. Algorithms and explainability technology have achieved good results in terms of both accuracy and interpretability, so the system can now handle some of the intermediate decisions, such as screening, classification and scoring, and only needs to obtain approval from managers. At present, the list of candidates will be automatically generated by the system, and only when the confidence level of this list is too low will the manager need to carry out a manual review[5].

The loop is closed, and now the deep migration will start. According to whether the manager approves or revises the proposal, the system will adjust its own parameters and gradually introduce the function of empirical judgment. For example, if it is found that the manager has repeatedly refused to conduct a certain kind of performance appraisal, then the weight of this item will be automatically reduced and no further manual modification will be required. At this time, some of the authority will be taken away by the algorithm's self-regulation mechanism. However, the migration is not one-way; if

there are systematic deviations or considerable changes in the business environment, the organisation will proactively start a new round of division-of-labour adjustment. The transfer of authority will be a tug-of-war, not an all-or-nothing handoff to machines.

### *2.3 Modify the Elasticity Management Threshold according to changes in the actual data*

The old way of personnel management was to carry out periodic evaluations (such as quarterly performance appraisals and annual promotions), but by the time these results were released, it was often too late to correct any problems. Now we have live data-stream feedback; indicators of employees' work behaviour, frequency of collaboration and timeliness of task completion can be continually gathered by digital systems and shown instantly. The threshold of the elastic management is a continuous set of data; if any one of the indicators exceeds the range of the preset value, management measures will be taken immediately and not wait for the end of a fixed evaluation period. The two attributes of the elasticity of the threshold are: first, it can be automatically adjusted according to the circumstances; that is, different thresholds will be used at different times and in different areas of the project; second, the strength of the response after crossing the threshold can be varied; that is, only a small deviation will trigger an alarm, and a serious one will require immediate action[6].

The other is that there is a trade-off among sensitivity and the rate of false alarms. A narrow threshold will result in many alarms and fail to draw the attention of people; a wide threshold will not inform them in time. Reinforcement learning is employed by the intelligent system to find the best boundary in the historical data, and according to the lagged feedback of business results for a particular dimension, it will automatically adjust the threshold. For example, if the system finds that there is a three-day lag between a drop in the frequency of collaboration and project delays, it will add three days to the warning period for the collaboration frequency threshold and increase the tolerance range to avoid a false alarm. Based on the actual output, dynamically change the parameter to make the management threshold a "living boundary" that can change on its own, and determine how large the deviation needs to be before intervening and how much deviation can be tolerated for a short time.

## 3. Evolution of Efficiency in Human Resource Management Models with the Introduction of Artificial Intelligence Technology

### *3.1 Nonlinear Improvement in Matching Accuracy of the Automated Recruitment Process*

An automatic recruitment system will use semantic features of job descriptions and candidate resumes to better understand the actual requirements of a person and make an automatic match. In the traditional recruitment model, the increase in matching accuracy is relatively large at the beginning; however, with a large number of resumes, it is necessary to lower the screening threshold to keep up with the speed of recruitment. With the development of artificial intelligence, many new ways have been introduced to find hidden data in a large number of resumes. For instance, it can find the explicit requirement of "three years of Python experience", and it can also extract unstated feature combinations from the profiles of previously successful employees, such as "having experience with open-source projects and a regular code-commit frequency". With the addition of this function, the matching accuracy will not decrease linearly with an increase in the size of the candidate pool; instead, there will be a jump in some ranges.

The second way to show non-linearity is to set up a two-way matching scheme. Traditional recruitment has only focused on whether a candidate is suitable for the position; an automated system can also consider how attractive that position is to the candidate at the same time and add other factors to the matching formula, such as the salary range, career development opportunities and team culture. If the system finds that a very suitable person has a high turnover rate, it will automatically reduce the recommendation weight of this person and increase the weight of an alternative that has slightly lower matching accuracy but better stability. The two-way evaluation does not have the simple logic of "the more precise, the better", and thus there are many local optima in the matching accuracy function. The system will no longer select only the "most suitable person", but also consider the probability of retaining them in order to achieve the overall objective of recruitment more effectively[7-9].

### *3.2 Knowledge Emergence Induced by Intelligent Recommendations in the Construction of a Learning Organisation*

An intelligent recommendation system can be employed as the knowledge base of a learning organisation. In the traditional training model, knowledge transfer is based on the manager's position or employee self-selection; a large number of tacit knowledge and cross-domain connections remain undiscovered in the corners of organisational memory. Based on the task paths of employees and the skill labels and content they have viewed, the recommendation system will recommend learning materials that these employees have not yet taken. These "unforeseen circumstances" are often the origins of new ideas; for example, when people are concerned about how older adults will use the service as they age, they start organising activities based on behavioural economics. The creation of knowledge is not the accumulation of course materials; rather, it is the presentation of previously unconnected pieces of knowledge to the same person.

Higher-level emergence happens at the group level. When several employees are exposed to the same combination of cross-domain content recommended by the system, they will work together to form a common understanding and build a new knowledge structure. Collect the distribution of aggregation in the system, automatically mark frequently occurring "content pairs" as potential knowledge modules, and return them to the corresponding role. Therefore, the whole organisation is in a state of knowledge self-development: recommendations trigger learning, learning is prompted by communication, communication produces new content, and this new content is added to the recommendation pool once again. There will be no central plan for this; instead, a knowledge network will be formed organically through the interaction of nodes.

### *3.3 Correction Mechanism of Turnover Prediction Models for the Human Capital Retention Curve*

A turnover prediction model will be constructed to identify changes in behaviour and reasons for leaving the company early, and then predict changes in staff turnover. The traditional retention curve is generally an empirical statistical distribution; new-hire turnover is usually high in the third to sixth month after joining the company, and senior employee turnover occurs every two or three years. The prediction model can also find some particular early warning signs that are different from the general trend mentioned above, such as a regular decrease in attendance, a drop in the node degree of the internal collaboration network, and a change in the type of document access from business-related to external job-search information. When the system determines that a person has a high likelihood of leaving the company, the retention curve will no longer be just a record of the past but an active tool we can modify at certain times[10].

The two typical ways of correction are: First, there will be preventive retention measures; if it is decided that a particular employee needs to be looked after, the manager can arrange a salary increase, job rotation or assignment to a different project before the employee is about to leave. The first kind of early intervention will change the slope of the retention curve at that time and either reduce the decline or delay it. Second, counterfactual analysis: Based on what would have occurred after all the various interventions, we can determine which one is more economical. For example, the model may find that job rotation is more effective than a pay increase and thus allocate the resources accordingly. Plotting the two paths shows that the total retention curve will not be a smooth decline but will have undulations; each trough is the result of a successful intervention. Managers will no longer be reactive to changes in staff and will take some initiative in managing staff turnover.

## Conclusion

The model of human resources management based on artificial intelligence technology has gone through stages of deconstruction, transition and evolution. Deconstruction at the level of this paper reduces the scope of algorithmic substitution, promotes the division of analysis work into individual tasks, and spreads out the weight of performance appraisal. At this time of change, the linear process has been modelled as a dynamic network, the path of migration for managerial authority in human-machine collaboration has been clarified, and elastic management thresholds are based on real-time data. In terms of development, there will be no continuous improvement in the accuracy of recruitment matching, knowledge emergence will be driven by intelligent recommendations, and the curve of human capital retention will be adjusted according to turnover prediction models. In the future, more research will be conducted on how the boundaries of substitution change with the progress of

algorithmic interpretability and what effect multimodal data fusion has on the stability of dynamic networks. Extend the collection period for the actual operating results of intelligent system self-regulation in various industries, and also learn how the endogenous logic of human resources management has been altered under the influence of artificial intelligence.

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