Optimization Research on the Performance Appraisal Process of Civil Servants Based on the OEEF Model

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Abstract: This article aims to optimize the performance appraisal process of civil servants by applying big data to enhance fairness and scientific rigor in assessments. It begins by highlighting the issues in traditional appraisal methods and then proposes a full-process data asset management flow based on the OEEF model. This flow encompasses modules for goal management, execution management, evaluation implementation, and feedback. The composition, theoretical basis, characteristics, functionalities, and extensions of the OEEF model are elaborated. Finally, the article provides a detailed exposition of process deployment and application, with a specific focus on comprehensive data utilization and the generation of dashboard interfaces. Research findings indicate that this system effectively enhances the scientific validity, fairness, and transparency of performance appraisals, thereby promoting the motivation and development of civil servants.

Keywords: Performance evaluation, OEEF model, big data application, individual profiling

1 INTRODUCTION

China's civil service system is gradually maturing, and performance appraisal is one of the crucially observed aspects [1]. However, traditional performance appraisals suffer from multiple issues, such as unscientific standards, subjective influences, and an inability to accurately reflect job performance. In recent years, comprehensive evaluations and big data analysis have emerged as potential solutions [2]. The former reduces subjective biases, while the latter employs data analysis to present a comprehensive performance overview that supports career development. Thus, this study aims to design an efficient and secure performance appraisal system for civil servants, utilizing the OEEF model for end-to-end data management.

2 Construction Process of the Civil Servant Performance Appraisal Full-Process Data Asset Management System based on the OEEF Model

When constructing the civil servant performance appraisal full-process data asset management flow based on the OEEF model, the overall architecture is depicted in Figure 1.

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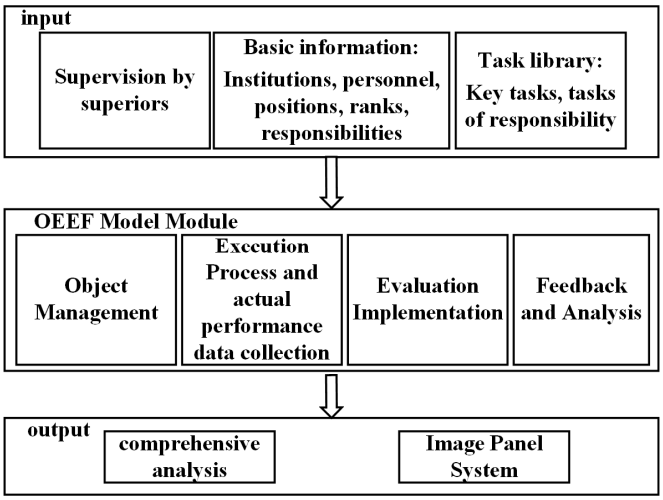

Figure 1. Overview of the full-link data asset management system for civil servant performance appraisal based on the OEEF model

In practical application, the process is divided into input module, OEEF model processing module, and output module. The input module is responsible for collecting crucial data such as supervisory opinions from superiors, basic personnel information, and task repositories. The OEEF model processing module systematically conducts the performance appraisal of civil servants based on its four phases. The output module visualizes the assessment results [2].

2.1 Overview of Input Module

The input module serves as a specialized repository for consolidating and categorizing external information required by the system [3]. It establishes a foundation for subsequent modules. This system's input module includes the following sources:

1. Task Repository Input: Tasks are divided into two main categories—superior tasks and job responsibility tasks. Superior tasks are decomposed top-down, also known as key goal tasks [4]. These tasks are claimed or assigned hierarchically, breaking down to specific departments and individuals [5]. The second type involves self-defined goals based on responsibilities, termed routine duty goal tasks. These tasks and plans are devised by departments or individuals, requiring approval for organizational and individual goals.

2. Supervisory Opinions Input: The system collects and organizes real-time evaluations from higher-level units during task execution, facilitating real-time monitoring and adjustments of employee performance.

3. Basic Information Input: The system collects and maintains fundamental information about units and individuals, including organization names, personnel, positions, ranks, and responsibilities [6]. This data ensures precise data matching and analysis during performance evaluation.

These elements constitute the core information input module. The input module solely gathers information and forwards it to subsequent modules without data processing.

2.2 Overview of OEEF Model Processing Module

This module stands at the core of the entire data asset management process. Its main role is to refine input information according to the OEEF model's specifications and requirements. It manages task data with precision and oversees end-to-end processes. The processed data is then channeled to subsequent output modules. This module comprises the following processes:

1. Performance Goal Management Process Module: Clear, measurable performance objectives are formulated to ensure employees comprehend their responsibilities and expected outcomes. Objectives must be actionable and reasonable to enable employees to achieve desired performance. Processes for goal establishment and modification follow a structured approach, guaranteeing consistency and authority.

Distinct goal management approaches are employed for the two types of tasks from the task repository.

For significant strategic tasks, as shown in Figure 2, prioritization considers urgency, importance, and departmental capacity. Key tasks are selected, forming the basis for task sorting, creation, or modification. Subsequently, tasks are assigned to the most suitable individuals or departments, achieved through departmental allocation or voluntary claim. Next, specific task details and requirements are conveyed to relevant personnel, ensuring comprehensive understanding of task specifics, objectives, and demands. Departmental tasks are further subdivided into individual tasks, clarifying responsibilities and objectives for each team member. Tasks are decomposed, planned, and adjusted as necessary during execution to manage and monitor task progress effectively, ensuring successful completion.

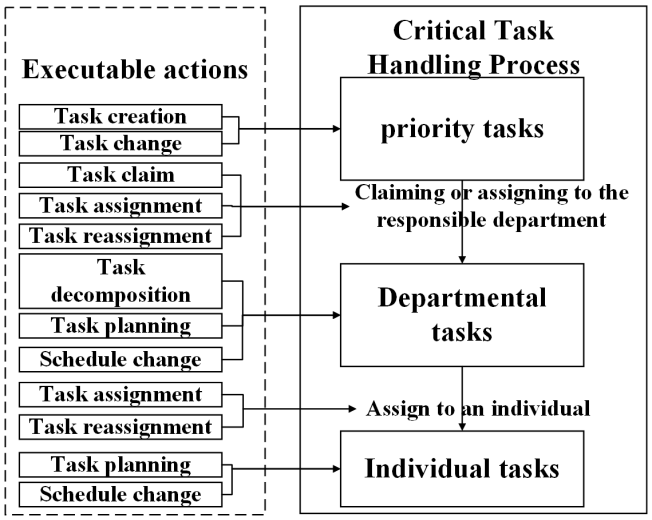

Figure 2. Process flow chart of major strategic tasks

For responsibility tasks, the process is illustrated in Figure 3.

To begin with, tasks relevant to responsibilities are extracted from the task repository and sorted based on departmental and individual capabilities. Subsequently, an initial allocation is performed, where department heads assign tasks to suitable individuals according to their

professional expertise. Simultaneously, both departments and individuals are enabled to modify, plan, and create tasks to accommodate actual requirements. Following the initial allocation, tasks are submitted for superior-level review to ensure their reasonableness and alignment with organizational objectives. Ultimately, tasks are established as objectives for both departments and individuals, with a specific emphasis on ensuring the smooth completion of these tasks.

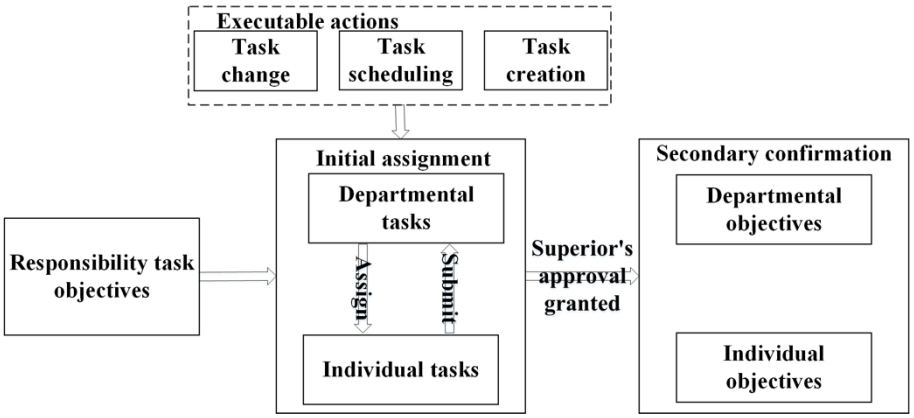

Figure 3. Process Flow Diagram for Responsibility Tasks

2. Performance Execution Process Module: This module is pivotal in assessing employees' work performance comprehensively and objectively, providing a basis for subsequent analysis, feedback, and improvement. The process includes the following steps:

During performance management, the primary step is to collect actual performance data. This includes data related to employee tasks, such as task completion status, time progress, and quality standards. These data serve as the foundation for accurate employee performance evaluation. Data sources include department submissions, automatic system integration, and employee submissions. Data is stored in the performance assessment actual data center, ensuring safety, reliability, and accessibility.As it is shown in Figure 4.

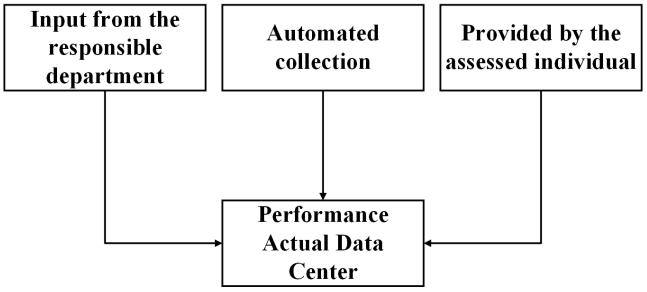

Figure 4. Conceptual Diagram of Actual Performance Data Collection

upervision is integral to performance management. During task execution, superiors or dedicated supervisory personnel monitor and guide employees to ensure tasks proceed as planned. Visual representations, such as various fill patterns indicating task status, enhance comprehension of task progress for effective supervision and decision-making.

Feedback on improvement measures is vital in performance management. Regular evaluations of performance execution occur based on established evaluation relationships, providing feedback to those evaluated. This feedback can take the form of written comments, visual indicators, or requests for improvement measures. This stage aims to help employees promptly understand and improve their work, enhancing work performance.As it is shown in Figure 5.

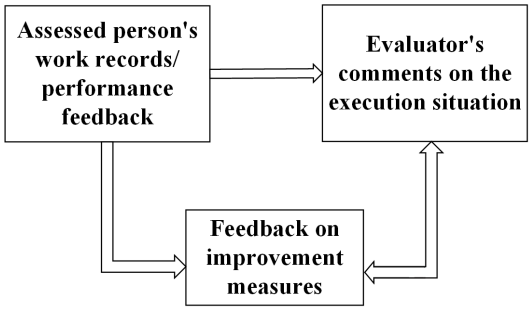

Figure 5. Conceptual Diagram of Feedback Process for Improvement Measures

Following task collection, supervision, and feedback on improvement measures, a comprehensive assessment of employees' performance is conducted, evaluating aspects such as task completion, work quality, and work attitude. Assessment results serve as crucial reference for personnel decisions like incentives, promotions, and training.

3. Performance Evaluation Implementation Module:

The performance evaluation implementation module assesses employees' work performance comprehensively and objectively, incorporating both quantitative and qualitative methods. The module includes four stages: evaluation setting, preparation, execution, and feedback, as depicted in Figure 6.

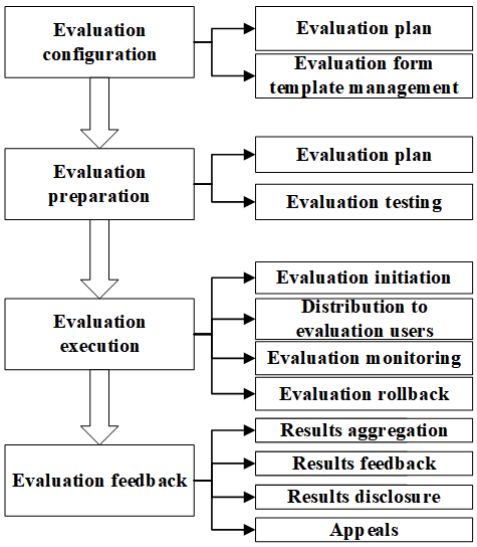

Figure 6. Conceptual Diagram of Performance Evaluation Implementation Module

Key stages in performance evaluation include:

- Evaluation Setting: Defining essential evaluation indicators, covering aspects like quality, efficiency, and innovation, ensuring objective and actionable indicators. Designing evaluation templates, clarifying weights and scoring criteria, lays the foundation for subsequent evaluations.

- Evaluation Preparation: Developing detailed evaluation plans, specifying timing, participants, and methods. Testing system stability ensures reliability. Adequate preparation ensures smooth evaluation execution.

- Evaluation Execution: Initiating evaluations, notifying participants, distributing evaluation forms, monitoring and tracking the process. Adjustments are made if necessary to ensure accuracy.

- Evaluation Feedback: Summarizing and analyzing evaluation results, generating comprehensive evaluation reports. Results are provided to evaluated individuals and management, along with improvement recommendations. Transparency is enhanced by sharing evaluation outcomes. Mechanisms for appeals ensure fairness.

The performance evaluation implementation module provides data and foundation for the evaluation feedback module, supports anonymous evaluations, safeguards privacy, and enhances fairness.

4. Performance Evaluation Feedback Module: First, employee performance data is collected online, including key work performance reports, goal completion, and work quality. Cloud servers comprehensively analyze this data, identifying strengths and areas for improvement across indicators, calculating a comprehensive evaluation score. Detailed performance evaluation reports are generated online, showcasing performance in various indicators and overall. Effective communication is emphasized, encouraging employees to engage in timely discussions with superiors to address evaluation results. After comprehending their performance, employees devise personal development plans online, outlining improvement goals and action plans. Superiors provide support and resources, such as training, guidance, or assistance in solving issues, through the online platform to aid employees' plan execution. The online system monitors progress in improvement measures, conducting periodic checks to assess performance enhancements. Development plans are adjusted as necessary, ensuring continuous work performance improvement.

2.3 Overview of the Output Module

The Output Module receives performance data collected and processed by the OEEF model module. Subsequently, the module consolidates and distributes the data to the Comprehensive Analysis Module and the Dashboard Panel Module. The purpose of the Comprehensive Analysis Module is to present, in a visual format, six categories of analyses for departments and individuals. The results are then visualized. The Dashboard Panel System presents the performance, basic information, and work status of departments and individuals through a user interface (UI) panel.

1. Comprehensive Analysis Module:

This module functions by retrieving relevant data from the performance database and achieving visual representation. It primarily encompasses the following six categories of analysis:

- Current Situation Analysis: This involves analyzing the overall task situation, task progress, distribution of assessment evaluations, and more for all departments.

- Trend Analysis: This enables the analysis of trends in specific types of tasks, specific assessment indicators, or individual subjects. For example, the analysis could focus on the completion status of tasks.

- Comparative Analysis: This includes horizontal and vertical comparisons at the departmental or individual level, as well as selected comparative analyses.

- Multi-perspective Analysis: Depending on operational needs, performance data can be analyzed and explored from multiple perspectives, allowing the data to speak and providing data support for decision-making.

- Early Warning and Reminders: By considering departmental, task, and individual dimensions, the module provides alerts and reminders for situations such as missing feedback, lagging tasks, and overdue tasks, as depicted in Figure 7.

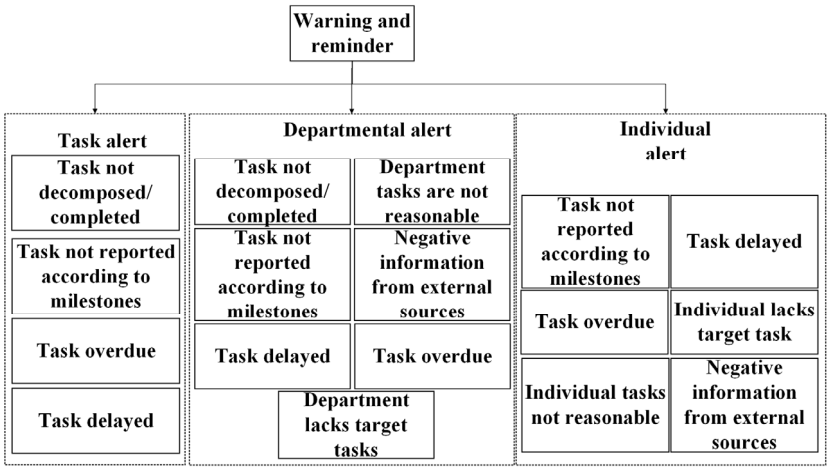

Figure 7. Conceptual Diagram of Warning and Reminder Process

2. Dashboard Panel System

The Dashboard Panel System is a data visualization tool utilized for displaying attributes, behaviors, and characteristics of individuals or departments [7]. Within this system, by analyzing and integrating data from the civil servant performance assessment system, the system is capable of generating clear and intuitive visual representations, facilitating a swift grasp of essential information about the target subject. The system comprises both an Organizational Dashboard Panel and an Individual Dashboard Panel. The system employs the RTT (Ranking, Tasks, Trending) framework to construct comprehensive profiles of individuals or organizations. Specifically, the Ranking module arranges individuals or organizations based on the weights and scores of various indicators, resulting in a ranking across diverse performance metrics. The Tasks module assesses the completion status of different tasks, thus forming a depiction of an individual's or organization's task accomplishments. The Trending module analyzes the trajectory of different indicators over a defined period for an individual or organization, thereby

delineating developmental trends. Through the integrated analysis of these three modules, comprehensive profiles of individuals or organizations are formulated, serving as a scientific basis for a holistic evaluation of performance assessment outcomes. This enhances the visualization and comparability of assessment results. The Dashboard Panel Generation System is illustrated in Figure 8 below.

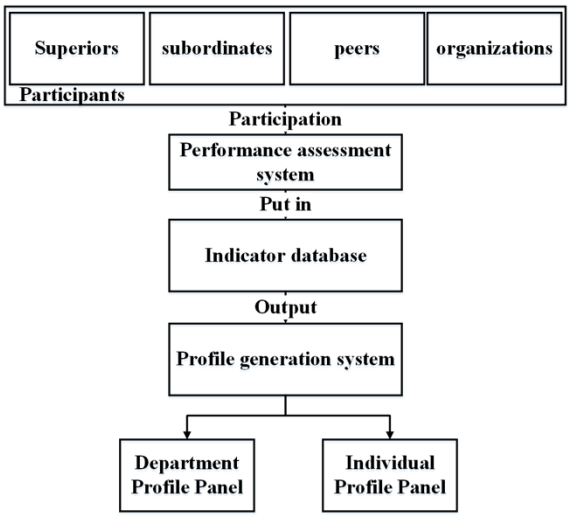

Figure 8. System Overview Diagram of Profile Panel

Organizational Portrait [8]: The Organizational Portrait segment presents an analysis of the current objectives, performance execution, and assessment evaluations for specific departments. It also scrutinizes the composition of personnel and provides an overview of overall personnel performance.

Individual Portrait [9]: The Individual Portrait Panel System comprehensively analyzes employees' political acumen, professional competence, and performance achievements. This data support aids in selection, appointment, and talent development processes. Political acumen assessment is based on an employee's participation in political studies and party activities, while professional competence evaluation considers knowledge accumulation, skill mastery, problem-solving capabilities within the professional domain. Performance achievement evaluation encompasses work results and task completion indicators, providing a comprehensive assessment of employee work performance. These integrated insights facilitate a deeper understanding of employees' strengths and areas for improvement, consequently supporting talent selection and development efforts.

The Portrait Generation System comprises the following steps, as depicted in Figure 9:

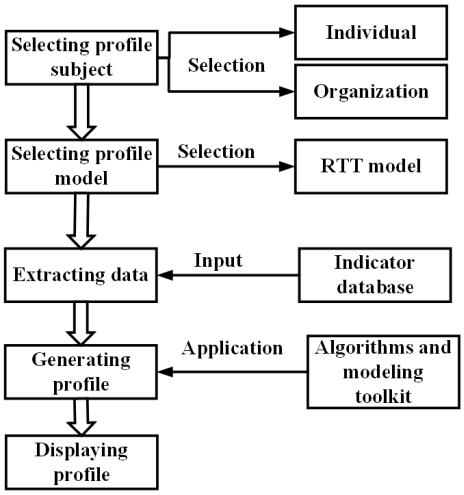

Figure 9. Process Flow Diagram of Profile Generation

- Selection of Portrait Subject: Choose the target subject for generating a portrait, which can be a department or an individual.

- Selection of Portrait Model: Choose the preferred portrait model, which could be the RTT modular approach or other models.

- Data Extraction: Extract relevant data from the database based on the selected portrait subject and model. This data includes rankings, tasks, trends, etc.

- Portrait Generation[10]: Utilize appropriate algorithms and graphic tools based on the extracted data to generate the desired portrait outcomes. Examples include ranking bar charts, task radar charts, trend line graphs, etc.

- Presentation of Portrait: Display the generated portrait outcomes on the corresponding portrait panel, whether it's an Organizational Portrait Panel or an Individual Portrait Panel.

As shown in Figure 10, the Organizational Portrait Panel encompasses the following components:

- Department Basic Information Module: Displays the department's name and introduction.

- Department Rankings Module: Presents the department's annual assessment ranking and its capability ranking for pioneering and excellence. Visualization options include bar charts or alternative graphical representations.

- Department Tasks Module: Encompasses detailed information about well-accomplished tasks, handling of key tasks, challenging tasks, task distribution by type, task proportion, and task attribute analysis. Visualization options can include radar charts or other graphical representations.

- Department Trendings Module: Illustrates the department's indicator changes and five-year assessment trends using line graphs or alternative graphical formats.

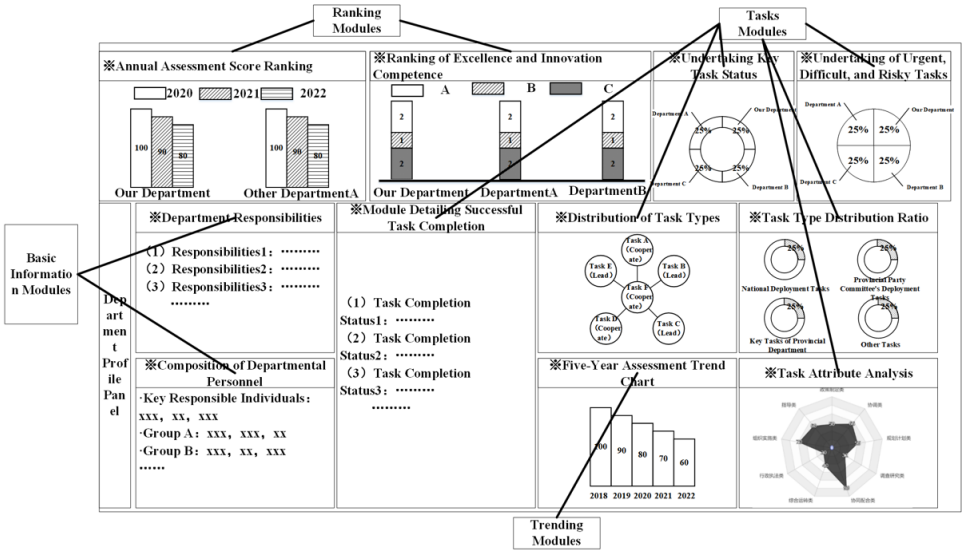

Figure 10. Conceptual Diagram of Department Panel System

As illustrated in Figure 11, the Individual Portrait Panel comprises the following elements:

- Personal Information Module[11]: Displays foundational personal details, professional background, annual organizational appraisal results, work summaries, work history, family background, and self-assessment.

- Individual Rankings Module: Presents the individual's rankings in the overall or subgroup context, including annual assessment ranking and pioneering and excellence ranking. Visualization options include bar charts or other graphical representations.

- Individual Tasks Module: Presents the individual's task completion and scoring across different tasks, including task type distribution and task attribute analysis. Visualization options can include radar charts or other graphical representations[12].

- Individual Trendings Module: Depicts individual indicator trends and predictions across different indicators using line graphs or other graphical representations[13].

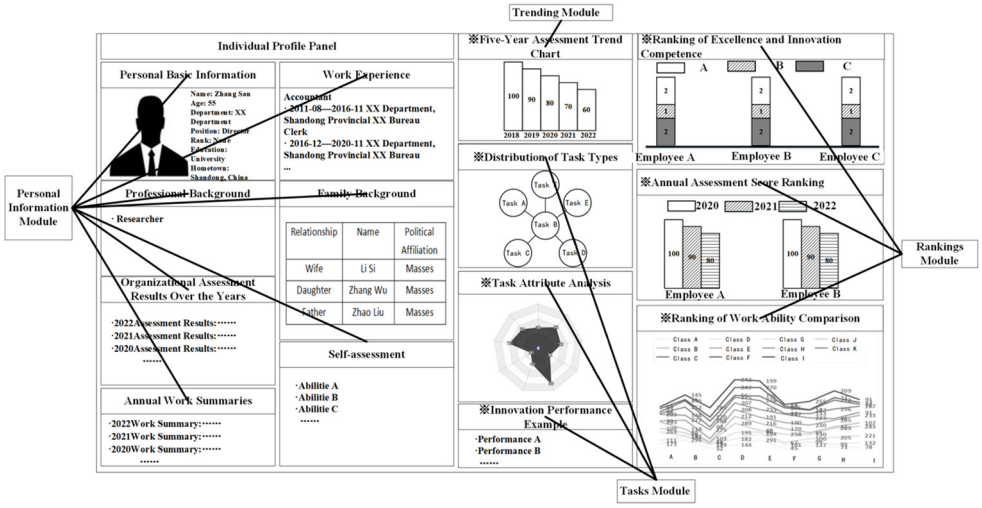

Figure 11. Conceptual Diagram of Individual Profile Panel

The aforementioned components constitute the Comprehensive Analysis System and Portrait Panel System. In the former, data is comprehensively collected and analyzed, providing decision-makers with impartial, systematic, and visual performance information, which assists in policy-making and resource allocation[14]. The latter, the Portrait Panel System, visually presents individual performance data, enabling leaders and managers to comprehend the strengths and areas of improvement for each department and employee. This insight aids in devising targeted training and motivation measures, ultimately enhancing overall work efficiency.

3 Conclusion and Issues

Through this study, we have observed that the comprehensive data asset management process for civil servant performance assessment, based on the OEEF model, along with its associated anonymous evaluation system and integrated big data analysis application, significantly enhances the scientific validity, fairness, and transparency of performance evaluations. However, there is still room for improvement in this research. In terms of big data application, there is potential to further expand the scope of data collection and analysis to encompass additional dimensions such as training needs and career development planning, thus providing more comprehensive support. Additionally, it should be noted that civil servant performance assessment is influenced by policies and institutional factors, which were not thoroughly explored in this study. Future research should concentrate on investigating the impact of policy changes on assessments and proposing more pragmatic improvement strategies.

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