

A decision-support tool for evaluating employee contribution toward organizational excellence

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Abstract. Evaluating individual employee performance in relation to job expectations is very important yet often subjective process in many organizations. This paper presents a decision-support tool designed to objectively assess employee contribution based on predefined job profiles and recorded task performance. The tool computes a composite performance score by analyzing task execution, completion rate, and alignment with role-specific weightings. Beyond basic scoring, the tool introduces innovative features such as gap analysis (identifying unfulfilled tasks), an efficiency index (comparing individual performance to the role average), and automated managerial recommendations (bonus eligibility, performance alerts, etc.). The implementation is supported by a user-friendly graphical interface and spreadsheet-based input for easy adoption. This contribution addresses the growing need for transparent, data-driven workforce evaluation systems that support operational excellence and informed HR decision-making. The tool is suitable for integration into small-to-medium organizations or for piloting strategic workforce optimization initiatives.

Keywords: Employee performance evaluation, Decision-support tool, Workforce analytics, Gap analysis, Operational excellence

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Introduction

In today's competitive business landscape, achieving operational excellence demands transparent and data-driven evaluation of individual employee performance. Traditional performance appraisals often rely on subjective assessments and managerial bias, limiting their effectiveness in supporting strategic workforce decisions. Human Resource Analytics (HRA) has emerged as a powerful paradigm for evidence-based decision-making in HR, enabling organizations to enhance operational performance and agility through systematic use of employee-related data [1].

Recent systematic reviews highlight that the most effective employee performance measurement strategies incorporate task execution, collaborator feedback, and alignment with job expectations, offering more actionable insights than annual or narrative reviews [2]. Furthermore, literature on digital transformation emphasizes that dynamic digital performance measurement systems foster adaptability and continuous improvement across industries [3].

Despite widespread adoption of HRA frameworks, many organizations still struggle to translate analytic outputs into contextualized and actionable managerial decisions. Bridging this gap requires not only quantification of performance, but also interpretive layers—such as benchmarking relative to peer roles and generating automated recommendations—elements that enhance precision, fairness, and transparency in HR practices [4].

Gap analysis, a method routinely used in strategic management, provides a structured way to compare actual employee output against role expectations and identify areas for performance improvement [5]. Meanwhile, emerging research in talent analytics and efficiency indices suggests that benchmarking individual performance against team or role averages can flag both high-potential employees and those needing intervention [6].

Building on these insights, this paper proposes a decision-support tool designed to evaluate employee contribution in a multidimensional manner by combining traditional scoring with enhanced analytics. Specifically, our tool introduces the following innovative components:

1. Gap Analysis, which identifies tasks unfulfilled relative to job profiles, enabling targeted role audits or training interventions.
2. Efficiency Index, which compares individuals' performance scores to average scores per role, offering context-sensitive evaluation.
3. Automated Managerial Recommendations, translating raw scores into actionable suggestions such as bonus eligibility, performance review, or risk alerts.

By integrating spreadsheet-based job profile inputs with a GUI (Graphical User Interface) made in Python programming language [7], the tool offers a practical, accessible solution for SMEs or units initiating workforce optimization initiatives without requiring large-scale HRIS investment.

Our contribution extends existing literature by providing a concrete, reproducible implementation that moves beyond descriptive analytics to prescriptive support—an important evolution advocated by scholars in HR analytics and operational excellence.

Literature review

Legman et al. [8] present the SPC indicator (The Assessment System of Employee Performance according to Customer Satisfaction) — a system for evaluating employee performance based on customer satisfaction and digital feedback mechanisms. Their model integrates technologies such as AR/VR and Lean Six Sigma, linking employee contributions to external service outcomes. While highly innovative, their framework is tailored for customer-centric environments and involves considerable technical complexity. In contrast, the tool developed in this paper focuses on internal organizational contribution, is role-agnostic, and uses simple, accessible input formats such as task completion records and performance benchmarks.

Zhang et al. [9] explores how electronic performance monitoring (EPM) impacts employee performance through the lens of social information processing theory. Their empirical findings suggest that the nature of feedback (developmental vs. preventive) significantly shapes performance outcomes. This supports the inclusion of interpretive analytics within performance tools, as implemented in this paper's system through structured feedback mechanisms, benchmarking, and decision-oriented recommendations that help contextualize individual results.

Davidescu et al. [10] empirically examine the relationships between work flexibility, job satisfaction, and performance among Romanian employees. Their results indicate that alignment between job expectations and actual contributions is a key determinant of performance levels. The tool proposed in this paper operationalizes that

principle by comparing expected deliverables (as defined in job profiles) against completed tasks, producing a gap analysis that highlights deviations from role alignment.

Cunha, Dinis-Carvalho et al. [11] investigate the barriers to implementing performance measurement systems in continuous improvement contexts. They identify challenges such as lack of transparency, distrust in indicators, and usability issues as major roadblocks. The decision-support tool developed here addresses these limitations by providing a transparent scoring algorithm, simple CSV-based input, and an intuitive GUI, promoting accessibility, clarity, and acceptance within organizations.

McCartney et al. [12] highlight an important shortcoming in many HR analytics implementations: the failure to integrate analytics into managerial decision-making workflows. They argue that data, when not translated into actionable insights, contributes little to organizational performance. This study responds to that challenge by embedding analytics into an interpretive framework that includes performance scoring, benchmarking, and automated recommendations, thereby closing the gap between data and managerial action.

Table 1 shows the comparison of this paper with the presented academic studies from the current literature review.

Table 1: Comparison of the current paper with academic studies from literature review

Reference	Strengths	Limitations	Added value of this study
Legman et al., “An innovative tool to measure employee performance through customer satisfaction: pilot research using eWOM, VR, and AR technologies”	- Develops an SPC-based indicator linking employee performance to customer satisfaction using advanced tech (AR/VR, Lean Six Sigma). - Outcome-driven model.	- High implementation complexity. - Narrowly focused on customer-facing services.	- Provides a simple, simple alternative focused on internal KPIs, usable across any organizational role.
Zhang et al., “Effect of Electronic Performance Monitoring on Employees’ Job Performance: A Social Information Processing Perspective”	- Empirically demonstrates how electronic performance monitoring (EPM) and feedback style impact performance.	- Conceptual. - Lacks a concrete software tool or applied system.	- Integrates structured, actionable feedback through performance benchmarking and automated recommendations.
Davidescu et al., “Work flexibility, job satisfaction, and job performance among Romanian employees— Implications for sustainable human resource management”	- Combines statistical modeling with practical tool implementation to assess job satisfaction, flexibility, and performance alignment.	- Focused on survey-based perception data. - Less attention to deliverable-based performance	- Builds on their practical model by using actual delivery/task data and job profiles to automate performance scoring and gap identification.
Cunha et al., “Performance measurement systems in continuous improvement environments: obstacles to their effectiveness”	- Identifies key organizational barriers to deploying performance systems (e.g., distrust, poor usability, indicator misuse).	- Descriptive. - Lacks a proposed interface or working prototype.	- Extending applicability beyond structured improvement environments by offering a role-agnostic. - Lightweight solution that integrates job profile–task alignment. - Efficiency benchmarking, and automated decision recommendations.
McCartney et al., “Bridging the gap: why, how and when HR analytics can impact organizational performance”	- Clarifies the conditions under which HR analytics impact organizational outcomes (integration into decisions).	- Lacks applied framework or prototype implementation	- Delivers their recommendation in practice via a Python-based tool generating automated insights and recommendations.

Methodology

To bring the proposed methodology into practical use, a lightweight decision-support application was developed in Python, following modular and function-oriented programming principles. The codebase was written in a clean, maintainable style using separation of concerns between:

- Data ingestion and validation
- Computation and evaluation logic
- User interface management

This structure enhances readability, facilitates debugging, and supports future extension of features (e.g., visualization, export options, role editor).

The application was implemented using:

- Python 3.10+: Chosen for its simplicity, readability, and large ecosystem of libraries.
- PySimpleGUI: A cross-platform GUI framework enabling rapid prototyping of desktop interfaces with minimal overhead.
- Pandas: For efficient tabular data manipulation and calculations on CSV files.
- Standard CSV files: Used for both input and output, ensuring compatibility with Excel, Google Sheets, and HR platforms.

The application architecture follows a modular design, with two primary inputs (see Figure 1):

- Job Profile CSV: Defines expected tasks and weights for each organizational role. Each task is assigned a weight (in percentage) representing its importance or frequency within the role.
- Employee Activity CSV: Captures actual tasks completed by each employee over a given period, with binary indicators of task delivery (Y/N).

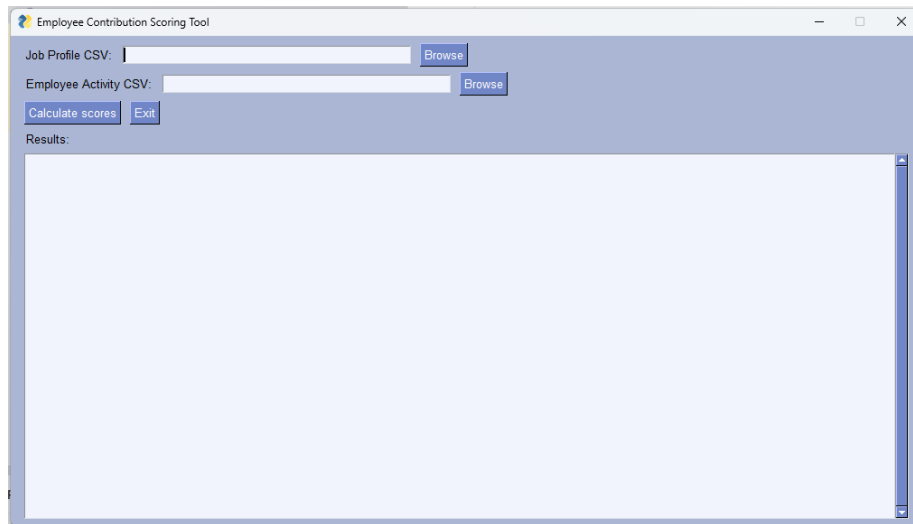


Figure 1: Application GUI

Source: Application developed by authors (2025)

The tool cross-references these two files to compute a performance score for each employee, expressed as a percentage of task expectations fulfilled. The calculation uses a simple weighted sum model:

$$Score_i = \frac{\sum_{j=1}^n Weight_j \cdot Delivered_{ij}}{\sum_{j=1}^n Weight_j} \times 100 \quad (1)$$

where:

- i is the employee,
- j is a task in the employee's role profile,
- $Delivered_{ij} = 1$ if the task was completed, otherwise 0.

The front-end interface is implemented to offer a minimalist and intuitive layout. Users load the two CSV files via a file picker interface, then trigger the calculation by pressing a dedicated button.

The core logic of the application is divided into the following functional blocks:

- Input Module: Loads two CSV files via GUI:
 - job_profile.csv – contains role-task-weight mappings
 - employee_activity.csv – logs individual task completions
- Scoring Engine:
 - Cross-references tasks delivered by each employee against their role’s task list
 - Computes a weighted fulfillment percentage
- Interpretation Layer:
 - Applies rule-based thresholds to derive performance categories:
 - $\geq 90\%$ → “Bonus eligible”
 - 70–89% → “Acceptable”
 - 50–69% → “Needs review”
 - $< 50\%$ → “High risk”
 - Optionally computes Efficiency Index relative to role averages
- GUI Module:
 - Allows file browsing, triggers computation, and displays results in multiline output

This interpretive layer transforms raw scores into actionable insights that managers can use directly.

In addition to absolute scores, the application can compute Efficiency Indexes by comparing each employee’s score to the average within the same role. This allows detection of outliers—either high-potential performers or underperformers—relative to peer expectations.

$$Efficiency\ Index_i = \frac{Score_i}{Average\ Score_{Role_i}} \quad (2)$$

This feature supports fairer performance evaluations by contextualizing contributions (see Figure 2 and Figure 3).

Employee	Role	Task	Delivered	Date
Corina	Analyst	Generate reports	Y	6/1/2025
Corina	Analyst	Attend client calls	Y	6/2/2025
Corina	Analyst	Team collaboration	N	6/3/2025
Laurian	Analyst	Generate reports	Y	6/1/2025
Laurian	Analyst	Attend client calls	N	6/2/2025
Laurian	Analyst	Team collaboration	N	6/3/2025
Vlad	Engineer	Develop features	Y	6/1/2025
Vlad	Engineer	Code review	Y	6/2/2025

Figure 2: Example of content for the employee_activity.csv file

Source: Authors’ own elaboration (2025)

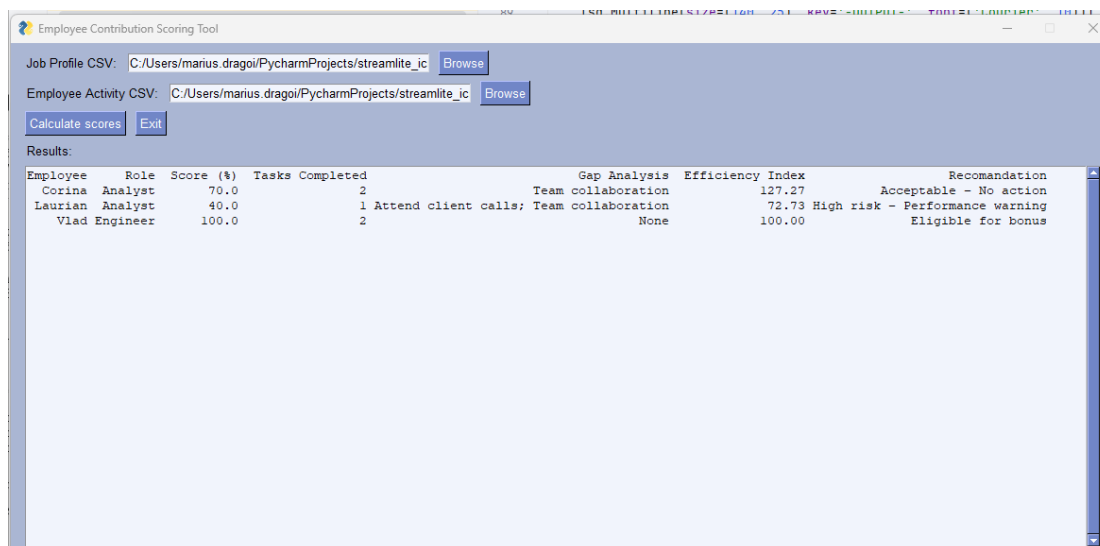


Figure 3: Example of using the application with two analysts and one engineer
Source: Authors' own elaboration (2025)

Results and further discussions

To evaluate the functionality and relevance of the proposed decision-support tool, a simulated dataset was created to reflect realistic employee behavior across different roles. The job profile input specified role-specific tasks and corresponding weights, while the employee activity file recorded individual task completions over a given performance period.

The test scenario included three employees (see Figure 2):

- Corina, Analyst
- Laurian, Analyst
- Vlad, Engineer

Each employee's performance was scored based on task fulfillment relative to their job profile. Additionally, the tool provided interpretive outputs including the efficiency index, gap analysis, and automated recommendations.

Figure 2 presents a fragment of the `employee_activity.csv` dataset, illustrating how individual task completion data is structured within the system. Each row represents an employee, and columns correspond to job-specific tasks, marked with binary indicators of delivery (Y/N). Figure 3 displays the application interface and computed results for the three sample employees (two analysts and one engineer). Together, these figures demonstrate how the system processes input data to generate weighted scores, efficiency indices, and interpretive recommendations.

The tool successfully identified gaps in task fulfillment and highlighted performance variances between employees within the same role (see Figure 3). For example:

- Corina completed 70% of the Analyst role expectations, which is above the group average of 55%, resulting in an Efficiency Index of 127.27. Though she missed one task, her overall output is acceptable.
- Laurian, with only 40% task completion, falls below the role average, triggering a "High risk" classification. The tool clearly flags specific tasks missed, aiding targeted intervention.
- Vlad fulfilled 100% of his role requirements, matching the Engineer profile exactly and receiving a positive recommendation.

Although the current version of the decision-support tool focuses primarily on task fulfillment relative to predefined role expectations, the time required to achieve these results was not incorporated into the performance score. Future iterations of the system could integrate time-based weighting to differentiate between employees achieving similar fulfillment rates but with varying levels of efficiency. This enhancement would further refine the composite performance indicator by considering both accuracy and timeliness.

A key strength of the application lies in its interpretive layer. Instead of producing raw scores alone, the tool translates performance metrics into managerial actions:

- Bonus eligibility, if performance exceeds expectations

- Neutral or “no action”, for satisfactory cases
- Risk alerts, for underperformance, along with actionable gap diagnostics

These interpretations reduce ambiguity and provide a consistent decision-making framework. The inclusion of the Efficiency Index adds contextual depth by situating individual performance within the peer distribution of the same role.

Moreover, the gap analysis column enhances managerial visibility into the exact nature of non-compliance, making performance reviews more constructive and evidence-based.

The results demonstrate that the tool can:

- Support performance transparency across all organizational levels
- Allow data-informed personnel decisions, such as targeted coaching or recognition
- Provide a foundation for HR process automation where performance-based triggers are needed

The tool may also serve as an early-warning system in performance management, flagging employees whose repeated low scores might justify intervention or re-evaluation of role fit.

From a technical standpoint, its low barrier to adoption (no installation, CSV input/output, GUI interface) ensures that even non-technical users in HR or team leadership roles can integrate it seamlessly.

Conclusion

This study introduced a practical and lightweight decision-support tool designed to quantify and interpret employee contribution toward organizational performance. By aligning actual task completion with role-specific expectations, the system provides a transparent and scalable framework for performance evaluation.

The application, developed in Python with a user-friendly PySimpleGUI interface, supports direct CSV input and output, making it accessible to non-technical users in human resources, team management, and operational leadership roles. Through a combination of weighted scoring, efficiency benchmarking, and gap analysis, the tool transforms raw performance data into actionable insights. Automated recommendations further simplify managerial decision-making by classifying each employee’s performance level and highlighting areas of concern.

Experimental validation using a simulated dataset confirmed the system’s ability to:

- Identify underperformers and high-potential individuals within the same role;
- Highlight specific tasks that were not completed as expected;
- Offer fair, data-driven recommendations for rewards, intervention, or no action;
- Benchmark individuals against peer averages using an interpretable Efficiency Index.

The results suggest that the tool can serve as a low-cost, high-impact solution for organizations seeking to formalize performance evaluation without complex infrastructure or black-box analytics. Moreover, its transparent and customizable design allows easy adaptation across sectors and organizational cultures.

Future work may explore integration with real-time HR systems, dynamic dashboards, or extensions into predictive analytics using historical performance patterns. Additionally, qualitative dimensions—such as employee feedback or soft-skill assessments—may be considered to enrich the interpretive framework.

In conclusion, the proposed tool fills an important gap between basic task tracking and strategic HR analytics, offering a robust, transparent, and actionable approach to performance management in modern organizations.

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