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# An Analysis of the Performance Management System: A Case of a Mining PSU of Odisha

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**Abstract**
This research paper looks into the Performance Management Systems (PMS) within a specific mining company, focusing on the perspectives of employees. It aims to understand the influence of PMS on employee motivation, performance and satisfaction in this high-risk sector. The study highlights the crucial role of PMS in the mining industry, emphasizing the need for employee-centric approaches that enhance job satisfaction and commitment. Using a diagnostic research design, the study employs surveys and interviews with employees. It explores factors like motivation, work environment and leadership's impact on the effectiveness of PMS. The research analyzes the data through various statistical methods, including Exploratory Factor Analysis and Pearson correlation coefficients, to identify patterns and relationships. The findings reveal the importance of components such as work-life balance, fairness and transparency in the PMS process. Regular feedback and alignment of individual goals with organizational objectives are also key. The study concludes that aligning PMS with employee needs and organizational goals can significantly improve employee satisfaction, motivation, and overall company performance. It underscores the importance of a tailored approach to PMS in the mining industry.

**Keywords:** Performance management system, Employee Satisfaction, Mining Industry, Organisational Effectiveness

## 1. Introduction

Performance Management Systems (PMS) have become integral to organizational success across various industries. Their impact is notably significant in sectors like mining, where operational efficiency and employee performance are closely intertwined (Basu & kumar, 2004) [4]. Studies emphasizes the positive relationship between electronic Human Resource Management (e-HRM) usage, including aspects of PMS, and employee outcomes such as performance and job satisfaction, thereby influencing organizational performance (Nyathi & Kekwaleswe, 2022) [24]. This highlights the importance of investing in employee-centric PMS for organizational success, especially in high-risk industries like mining. In the mining sector, the implementation of robust PMS is not just a strategic tool but a necessity, considering the sector's high-risk and dynamic operational environment. There are studies emphasizing the critical role of job satisfaction in improving employee motivation and commitment, which is directly influenced by effective management practices, including PMS (Ling et al., 2018) [22]. This research aims to explore the intricacies of PMS from the perspective of employees in a specific mining company, providing insights into how employees perceive, interact with, and are influenced by the PMS in their workplace. The evolution of PMS has seen a growing emphasis on employee-centered approaches (Tripathi et al., 2021) [47]. In high-risk industries like mining, where traditional focus has been on operational outputs, aligning PMS with employee expectations and career development goals is essential (Rajapakshe, 2024) [33]. The adaptability and responsiveness of PMS to the changing dynamics of the workplace are crucial in the volatile mining sector (Zhu et al., 2022) [50]. Furthermore, the role of feedback mechanisms within PMS is pivotal for employee growth and performance improvement, as timely and constructive feedback can significantly impact operational success and employee morale (Olsen at al., 2007) [25]. Additionally, the integration of technology in PMS, such as advanced data analytics and AI, offers the potential for more objective and comprehensive performance assessments (Zong & Guan, 2024) [51].

This technological integration is particularly beneficial in the mining industry, where data from

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various operations can be vast and complex, leading to more informed decision-making and enhanced performance tracking.

The necessity to explore Performance Management Systems (PMS) in the mining industry from an employee's perspective is underscored by several recent studies. Studies involving the efficacy of PMS in augmenting employee motivation and performance in a dynamic business environment suggest that PMS can significantly influence employee outcomes. This study underlines the potential of PMS to enhance both motivation and performance, which is particularly relevant in the high-stakes environment of the mining industry.

Additionally, the work of Behery (2021) [5] discusses the causal relationship between the implementation of 360° performance management and organizational outcomes such as trust, commitment, satisfaction and intention to leave. This highlights the importance of understanding the impact of PMS on employee attitudes and behaviors in the mining sector, where trust and commitment are crucial for safety and productivity. Furthermore, the study by Gackowiec et al., (2020) [14] on the use of key performance indicators (KPIs) to increase the efficiency of activities and motivation of employees, including in the gold mining industry, provides a direct link to the mining sector. This research indicates the effectiveness of PMS in enhancing employee motivation and operational efficiency in various industries, including mining. Moreover, the paper by Tarigan et al. (2022) [45] on the adoption of a total reward system (TRS) and its positive influence on job satisfaction, employee productivity, and company financial performance for Generation Z workers underscores the evolving nature of employee expectations and the need for adaptive PMS strategies. This insight is particularly relevant in the mining industry, where attracting and retaining younger generations of workers is increasingly vital.

In the context of digitalization and the fourth industrial revolution, the research framework, which investigates the impact of technical systems, work assignments, and worker features on employee satisfaction and performance, provides a contemporary perspective on how PMS needs to adapt to technological advancements. This aspect is critical in the mining industry, which is rapidly integrating digital technologies (Paposa & Kumar, 2015; Davidescu et al., 2020; Bangwal et al., 2017) [27, 11, 3]. Given these considerations, this research in the mining industry is justified as it addresses a critical gap in understanding how PMS impacts employee motivation, performance, and satisfaction in a high-risk and technologically evolving industry. The findings from this research will not only contribute to the academic literature but also provide practical insights for mining companies seeking to enhance their performance management practices in alignment with employee perspectives and the changing industrial landscape.

## Literature Review

The field of Performance Management (PM) has seen significant evolutions, particularly focusing on employee perspectives and its impact on organizational success. A key aspect of PM is understanding the role of employee perspectives in driving organizational success. Varshney (2019) [48] emphasize the impact of job involvement, satisfaction, and organizational commitment on employee performance, indicating that these variables are crucial for organizational success. Aligning with this, the study by

Rinaldi and Riyanto (2021) [36] suggests that job satisfaction and the work environment significantly affect Organizational Citizenship Behavior (OCB) and performance. The role of leadership in shaping PM practices is highlighted by Pradhan and Pradhan (2015) [31], who found that transformational leadership positively affects employee performance, leading to increased motivation, trust, and commitment. Complementing this, Tian et al. (2016) [46] discusses how Human Resources Management Systems (HRMS) positively correlate with employee performance, with job embeddedness and organizational commitment serving as mediators. The integration of technology in PM is gaining importance. Garg et al. (2021) [15] illustrate how deep learning has improved the accuracy and efficiency of recruitment and performance evaluation in HRM, impacting both organizational performance and employee development positively. The cultural and environmental aspects of PM are also crucial. Boukis and Christodoulides (2018) [6] explore the concept of Employee-Based Brand Equity (EBBE) and its role in organizational performance, suggesting the influence of culture, leadership, and brand management. In a similar vein, A. Singh and Jha (2018) [44] emphasize the importance of employee health and well-being programs in enhancing employee satisfaction and productivity. The sustainability of PES and its impact on organizational performance management is explored by Ensslin et al. (2022) [13], who identify "learning" as a critical component contributing to effective performance management. Pawirosumarto et al. (2017) [29] discusses how leadership, organizational culture, and the work environment influence employee productivity, all essential for achieving organizational success. Additionally, Krishnaveni and Monica (2018)'s [18] review indicates a relationship between PM practices and organizational effectiveness, influenced by factors such as employee engagement and training.

A significant study conducted during the COVID-19 pandemic highlighted job insecurity as a primary stressor in the Indian construction industry, leading to psychological stress and emotional exhaustion among employees (Khan et al., Liang et al., 2022; Kumar et al., 2021) [17, 21, 19]. This emphasizes the changing dynamics of job security and its impact on employee well-being and performance in times of crisis. Addressing PM issues in specific sectors, Salleh et al., (2020) [38] proposed a lean, agile, resilience, and green (LARG) performance model to control performance issues in Indian seaports, focusing on operational, economic, and environmental performance. This model provides insights into managing performance in complex and dynamic operational settings. Ravi (2014)'s [35] study on an Indian automobile manufacturer used the SAP-LAP framework to investigate issues affecting business excellence. The study highlighted the need for policies like energy liaison, focused maintenance, and IT utilization for cost management, underscoring the specific challenges in manufacturing performance management in India. They identified financial, supplier, and demand/customer/market risks as critical factors affecting performance, with sub-risks like loss of customers and raw material issues being particularly impactful (Sharma et al., 2023; A.K. Singh, 2014) [41, 43]. A study by Budhedeo and Pandya (2020) [8] on liquidity management and business performance of Indian banks post the 2008 financial crisis showed how banks adopted cautious liquidity management policies while managing business growth at a slower pace. This provides an understanding of how external economic factors impact performance

management in the banking sector. Studies focused on performance parameters in Indian companies targeted by activist shareholders, proposing director-related issues as a significant concern. This underscores the importance of leadership and governance in performance management in the corporate sector (Shingade *et al*., 2022; Rastogi *et al* 2023) [42, 34]. Ghatak and Garza-Reyes (2024) [16] identified factors influencing the adoption of Smart Manufacturing in India, including management uncertainty, skilled workers, and regulatory challenges. Their findings highlight organizational factors critical to implementing advanced manufacturing technologies and their impact on performance. Panpatil *et al*., (2023) [26] developed a performance measurement framework for Green Supply Chain Management in Indian manufacturing organizations. This study reflects the growing importance of sustainability in performance management and the need for frameworks that incorporate environmental considerations. Senthilkumar *et al*., (2013) [40] emphasized the significance of ICT in enhancing the performance of dairy companies in India. This study justifies the exploration of PM in the Indian context by highlighting how technological advancements, specifically ICT, are pivotal in optimizing organizational performance. Sayeda, *et al*., (2010) [39] investigated the impact of memos and training on the performance of an academic management system in an Indian higher education institute, highlighting the importance of studying PM in educational settings. Choudhury *et al*., (2021) [10] explored how private coaching classes in India contribute to enhancing students' learning and academic performance. This provides justification for studying PM in the context of Indian higher education, where external coaching plays a significant role. Yadav's (2020) [49] application of system dynamic methodology in developing a PM model for an Indian automotive firm justifies studying PM in India by emphasizing the importance of strategic interventions and firm performance beyond traditional indicators. Potharla (2022) [30] found that earnings management in non-financial Indian listed firms impacts future performance. This study provides evidence for the necessity of examining PM practices in the context of financial performance in Indian firms. A study on Indian family firms found that family ownership and management positively impact firm performance. This study justifies exploring PM in the context of family-run businesses in India, which constitute a significant part of the Indian economy (Chahal & Sharma, 2022) [9]. Sakikawa *et al*., (2017) [37] study provides evidence for the positive relationship between PM practices and business performance in India, indicating the importance of effective PM strategies for organizational success.

## Methodology

Research methodology encompasses the approach and techniques used to conduct a study, involving the definition of the research problem, hypothesis formulation, sample selection, data collection and analysis, and conclusion drawing. This study, focusing on employee performance and performance management practices in a specific organization, utilizes a quantitative research design to identify factors influencing employee performance. An extensive literature review revealed significant gaps: notably, a lack of substantial studies on the Performance Management System (PMS) of Coal India or the mining company under study. Few studies have examined the reliability of existing PMS, and employee perspectives on PMS in the mining sector have been rarely explored. Investigating the

performance management process in organizations is vital as it offers insights into the effectiveness of employee performance assessment and management. This study seeks to understand and improve performance management systems, contributing to better practices and strategies for managing employee performance and achieving organizational goals. Effective performance management is also crucial for enhancing employee morale and job satisfaction (Armstrong & Taylor, 2002) [2].

### The study aims to
- Assess the suitability of the existing PMS system.
- Identify factors influencing employees' decisions to undergo PMS review.
- Evaluate employee satisfaction with the current PMS process.
- Suggest measures to enhance the PMS process.

A diagnostic research design is employed to identify factors affecting employee satisfaction with the current PMS. This involves analyzing the existing system, reviewing literature, conducting surveys, and interviewing employees. The data collected is analyzed to pinpoint key drivers of employee satisfaction and areas for improvement in the PMS. The study uses convenient random sampling, selecting participants based on accessibility and willingness to participate. To ensure diversity and representativeness, stratified random sampling is also incorporated, dividing the population into subgroups for participant selection. Data is collected from executive employees using structured questionnaires, focusing on factors like abilities, motivation, work environment, leadership, and work-life balance. The questionnaire specifically targets factors affecting PMS and the reliability of appraisal forms used in performance assessment. The validity and reliability of the appraisal questionnaire are assessed using a reliability test in SPSS. Exploratory Factor Analysis (EFA) with principal component analysis and varimax rotation is conducted to identify key factors influencing employees during the PMS process. This technique explores the relationship between satisfaction levels and motivation to undergo PMS in a graphical format, identifying patterns and outliers. The Pearson correlation coefficient is calculated to examine the link between satisfaction with PMS and various influencing factors, assessing the strength and direction of their relationships.

## Analysis & Findings

**Table 1:** Reliability Statistics

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
|---|---|---|
| .701 | .832 | 11 |

The "α" value of .701 for 11 items is quite satisfactory and shows the reliability of the scale. This makes it clear that the questionnaire is appropriate to administer and the data gathered from this will be reliable for the study. Then the reliability of the existing Performance Appraisal Questionnaire was analyzed through reliability statistics in order to check whether the existing PAQ is suitable or not. It was done with the help of 30 PAQs of last financial Year of the Company. Where, the Cronbach's Alpha was found to be .833 which advocates for the existing PAQs being able to fulfil the need of the organisation to evaluate the Performance

of the employees. Hence the study focuses on the satisfaction and perception of the employees towards the PMS.

**Table 2:** Rotated Component Matrix[a]

| Rotated Component Matrix[a] | Component | | | |
|---|---|---|---|---|
| | 1 | 2 | 3 | 4 |
| Career Advancement opportunities | | | | |
| Recognition and Awards | | | | |
| Personal Development | | .568 | | |
| Work-life balance | .789 | | | |
| Fairness of the PMS process | .530 | | | |
| Clarity of performance objectives | | | | |
| Regularity of performance feedback | | | .874 | |
| Transparency of appraisal process | | .567 | | |
| Opportunities for professional growth | | | | .859 |

**Extraction Method:** Principal Component Analysis.
**Rotation Method:** Varimax with Kaiser Normalization.
Rotation converged in 8 iterations
The output from the Exploratory Factor Analysis (EFA) using Principal Component Analysis with Varimax rotation reveals the loadings of various performance management system (PMS) aspects on four distinct components. Component-1 can be named Employee Engagement and Motivation as it has significant loadings Work-life balance (.789) and Fairness of the PMS process (.530). This component reflects how factors like work-life balance and perceived fairness in the PMS process contribute to employee engagement and motivation. Literature suggests that fair and transparent PMS practices lead to higher employee engagement and motivation, as they align employee goals with organizational objectives (Aguinis, 2013; Armstrong & Taylor, 2014) [1, 2]. Component-2 can be called as Professional Development and Performance Perception having significant loadings on Personal development (.568) and Transparency of appraisal process (.567). This component represents the employee's perception of professional growth and the transparency of the performance appraisal process. Studies indicate that personal development opportunities and clear, transparent appraisal systems are key to employee satisfaction and perceived performance management effectiveness (Pulakos, 2009) [32]. Component-3 will be called Feedback Efficacy showing significant loading on Regularity of performance feedback (.874), which underscores the importance of regular feedback in the PMS. Regular and constructive feedback is crucial for continuous performance improvement and aligns with research emphasizing the role of ongoing feedback in effective performance management (DeNisi & Smith, 2014[12]; Buckingham & Goodall, 2015) [7]. Component-4 is termed Goal Alignment and Achievement having a significant loading Opportunities for professional growth (.859) and this component suggests the significance of aligning employee goals with opportunities for professional growth. Literature supports that aligning individual goals with organizational goals leads to higher job satisfaction and performance (Locke & Latham, 2002) [23].

Focusing on work-life balance and fairness in PMS can boost employee engagement and motivation. This implies that the organization should prioritize equitable treatment and consider employee personal needs alongside professional demands. Engaged and motivated employees tend to be more productive, committed, and less likely to leave the organization, which can reduce turnover costs and enhance overall performance. Ensuring personal development opportunities and transparent appraisal processes can improve employees' perception of their career growth and trust in the PMS. This can lead to higher job satisfaction and retention rates, as employees are more likely to stay with an organization that invests in their growth and operates transparently. Regular, constructive feedback is crucial for employee development. The organization should establish continuous feedback mechanisms rather than relying solely on annual reviews. Continuous feedback supports employee development, helps in timely course corrections, and aligns employee efforts with organizational goals. Providing opportunities for professional growth and aligning them with organizational objectives can ensure that employees feel their work contributes to the larger goals of the organization. This alignment can increase job satisfaction and performance, as employees understand how their work fits into the overall mission and are motivated to contribute effectively.

Aligning the PMS with organizational strategy, culture, and employee needs can enhance overall effectiveness and contribute to organizational success. Effective PMS can be a tool for talent management, aiding in identifying high performers, addressing skill gaps, and planning for succession. By focusing on the highlighted components, the organization can foster a culture of continuous improvement, transparency, and employee well-being. The findings can guide managerial decisions regarding resource allocation for training, development programs, and system enhancements. The organization may need to revisit its performance evaluation criteria and methods to ensure they accurately reflect and support the identified components.

**Table 3:** Correlation Matrix

| | Age | Gender | Years of Service | PMS Reflects Performance | PMS Influences Satisfaction | Motivation for PMS |
|---|---|---|---|---|---|---|
| Age | 1.000 | -0.105 | -0.191 | 0.292 | -0.053 | 0.002 |
| Gender | -0.105 | 1.000 | -0.087 | -0.012 | 0.074 | -0.248 |
| Years of Service | -0.191 | -0.087 | 1.000 | -0.188 | -0.195 | 0.148 |
| PMS Reflects Performance | 0.292 | -0.012 | -0.188 | 1.000 | -0.077 | 0.022 |
| PMS Influences Satisfaction | -0.053 | 0.074 | -0.195 | -0.077 | 1.000 | 0.003 |
| Motivation for PMS | 0.002 | -0.248 | 0.148 | 0.022 | 0.003 | 1.000 |

Age shows a moderate positive correlation with the extent to which PMS reflects actual performance (0.292), indicating that older employees may perceive PMS as more reflective of their performance and has a weak negative correlation with job satisfaction (-0.053) and almost no correlation with motivation for PMS (0.002), suggesting that age may not be a significant factor in determining job satisfaction or motivation related to PMS. Gender shows a moderate negative correlation with motivation for PMS (-0.248), suggesting possible gender differences in motivation levels towards PMS. It shows a weak positive correlation with job satisfaction (0.074) but no significant correlation with how PMS reflects actual performance (-0.012). Years of Service displays weak negative correlations with both PMS reflects actual performance (-0.188) and PMS influences job satisfaction (-0.195), suggesting that longer-serving employees may view PMS less favourably. However, It shows a weak positive correlation with motivation for PMS (0.148), indicating that employees with more years of service might be slightly more motivated to participate in PMS. The variable named PMS Reflects Actual Performance shows weak negative correlations with job satisfaction (-0.077) and

motivation for PMS (0.022) which indicates that the perception of PMS reflecting actual performance does not strongly correlate with job satisfaction or motivation. Job Satisfaction and Motivation for PMS show almost no correlation (0.003), suggesting that job satisfaction does not significantly impact motivation to engage with PMS.

The organization may need to consider age and gender when developing and communicating PMS policies to ensure they are perceived as fair and reflective of actual performance. Tailored strategies might be needed for employees with longer years of service, as their perception of PMS and its impact on job satisfaction could differ from those with less tenure. Since the correlation between how PMS reflects performance and job satisfaction is weak, the organization might explore other factors influencing job satisfaction. The findings suggest that demographic factors such as age, gender, and years of service have varying levels of impact on employees' perceptions of PMS, their job satisfaction, and motivation to participate in PMS. These insights can guide the organization in tailoring its PMS to meet diverse employee needs and improve overall effectiveness.

**Table 4:** Correspondence Table

| To what extent do you feel the current PMS reflects your actual performance? | To what extent does the current PMS influence your job satisfaction? | | | | | |
|---|---|---|---|---|---|---|
| | Not at all | Slightly | Moderately | Very Much | Completely | Active Margin |
| Not at all | 1 | 4 | 3 | 1 | 5 | 14 |
| Slightly | 4 | 2 | 3 | 1 | 3 | 13 |
| Moderately | 2 | 0 | 0 | 0 | 5 | 7 |
| Very Well | 3 | 2 | 1 | 1 | 1 | 8 |
| Extremely Well | 2 | 0 | 2 | 3 | 1 | 8 |
| Active Margin | 12 | 8 | 9 | 6 | 15 | 50 |
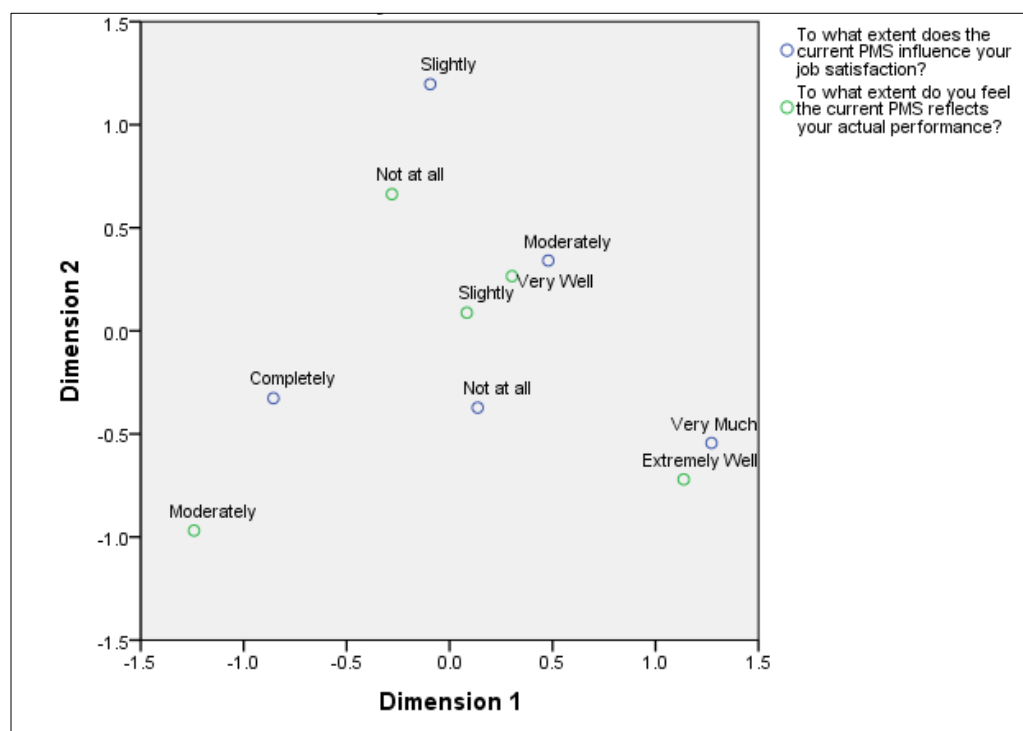


**Fig 1:** Row and Column Point Symmetrical Normalization

The Correspondence Analysis biplot and the accompanying table present a visual and numerical analysis of the relationship between two key questions related to the Performance Management System (PMS):

- To what extent does the current PMS reflect your actual performance?
- To what extent does the current PMS influence your job satisfaction?

The active margin (row and column totals) shows the distribution of responses. "Not at all" has the highest row margin (14), while "Completely" has the highest column margin (15). There is a notable concentration of responses (5) at the intersection of "Not at all" for reflection of actual performance and "Completely" for job satisfaction influence, which is an interesting contradiction. The "Moderately" row has the lowest active margin (7), indicating fewer responses feel that PMS moderately reflects their actual performance. The "Very Much" and "Extremely Well" categories for job satisfaction influence have relatively low active margins (6 and 8, respectively), suggesting that fewer respondents feel a strong influence of PMS on job satisfaction.

The biplot shows the proximity of response categories to each other in a two-dimensional space, with Dimension 1 and Dimension 2 representing the axes. "Not at all" for PMS reflection and job satisfaction influence are close on the plot, indicating a strong association between these levels of response. "Completely" for job satisfaction influence is situated far from most categories on both dimensions, suggesting it is a distinct category with less in common with other responses. Responses indicating a positive reflection of performance ("Very Well" and "Extremely Well") are on the opposite side of the biplot from "Not at all," suggesting a divide in respondent perceptions.

There seems to be a varied perception of how well the PMS reflects actual performance and its influence on job satisfaction, with some respondents seeing no reflection but complete influence on job satisfaction. The organization may need to address the discrepancy where employees do not feel that PMS reflects their performance yet impacts their job satisfaction significantly. The spread of points suggests that there is no simple linear relationship between how PMS reflects performance and its influence on job satisfaction; the organization might need to consider a more nuanced approach to understanding employee perceptions.

## Conclusion & Suggestions

The Cronbach's Alpha of .701 for the PMS questionnaire and .833 for the PAQ indicates good internal consistency and reliability. This suggests that the items within each questionnaire are well-correlated and measure a single construct effectively, making the questionnaires reliable for assessing employee perceptions and satisfaction with the PMS.

The EFA identified four components that capture the essence of employee engagement, motivation, and perceptions of the PMS. Factors like work-life balance and fairness of the PMS contribute to employee engagement and motivation. Organizations should prioritize equitable treatment and consider personal needs to boost productivity and reduce turnover. Personal development opportunities and transparency in appraisal positively affect employees' perception of growth and trust in the PMS. Regular performance feedback is crucial for continuous improvement, suggesting that organizations should move towards more frequent and constructive feedback. Aligning employee goals with professional growth opportunities can increase job satisfaction and performance.

The analysis showed moderate and weak correlations among demographic variables, perceptions of PMS, job satisfaction, and motivation. Older employees might perceive the PMS as more reflective of their performance, while gender differences suggest variations in motivation to engage with PMS. The weak correlations suggest that the relationships between how employees view PMS and their job satisfaction or motivation are not straightforward and are influenced by multiple factors.

The correspondence analysis revealed a diverse perception of the PMS, with some employees not feeling that PMS reflects their performance yet significantly influences their job satisfaction. The organization might need to delve deeper into understanding why employees have these perceptions and what can be done to align PMS more closely with employee performance and satisfaction.

The organization should consider refining its PMS to better align with the identified factors, ensuring it is responsive to the needs and perceptions of employees across different demographics. A more personalized approach to performance management may be required, considering the variance in perceptions based on age, gender, and years of service. Given the complex interplay of factors affecting employee satisfaction and motivation, a multifaceted approach to PMS design and implementation is recommended. The organization could benefit from leveraging these insights to foster a culture of continuous improvement, transparency, and employee well-being, ultimately leading to enhanced organizational performance and competitiveness.

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