Tampere University of Applied Sciences

Enhancing Employee Performance Management: An AI Driven Approach to Overcome Key Challenges

Nikhil Tambekar

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ABSTRACT

Tampereen ammattikorkeakoulu
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Employee Performance Management (PM) plays a vital role in aligning individual goals with strategic organizational objectives. It is a continuous process that comprises the identification, measurement, and development of employee performance. However, many organizations have faced challenges in performance data collection due to manual processes, lack of standardization, and limited managerial time. These issues have often resulted in biased evaluations, inaccurate ratings, and reduced employee engagement.

The aim of this thesis was to examine the key challenges faced by managers in collecting accurate and actionable employee performance data. The study leveraged theoretical frameworks and current research in performance management to investigate how Artificial Intelligence (AI) could be utilized to automate and enhance the data collection process, thereby enabling more effective performance feedback.

The research was conducted using a mixed-methods approach, combining quantitative surveys and qualitative interviews with people managers in the Information Technology (IT) sector. The theoretical framework examined the performance management process, its benefits and limitations, as well as foundational AI concepts and associated ethical considerations.

Key findings revealed that accurate data collection is the most challenging and resource-intensive aspect of performance management, primarily due to non-standardized processes and difficulties in capturing qualitative contributions. As a result, performance data often remained insufficient, fragmented, and prone to bias. While respondents were optimistic regarding the potential of AI to enhance fairness and efficiency in evaluations, concerns persisted around ethical issues, particularly algorithmic bias, data accuracy, data privacy, and security.

The thesis concludes by recommending the adoption of AI-driven techniques to automate data collection and enable real-time access to performance data. Such advancements are expected to improve both the efficiency and accuracy of performance management processes.

Key words: Employee Performance Management, Artificial Intelligence, Ethics

CONTENTS

GLOSSARY or ABBREVIATIONS AND TERMS (choose one or other)

AI	Artificial Intelligence
GenAI	Generative Artificial Intelligence
HR	Human Resources
HRM	Human Resource Management
IBM	International Business Management
IT	Information Technology
KPI	Key Performance Indicators
LLM	Large Language Models
PIP	Performance Improvement Plan
PM	Performance Management
SMART	Specific, Measurable, Achievable, Realistic, and Time-bound goals
TAMK	Tampere University of Applied Sciences

1 INTRODUCTION

This chapter presents the background of the thesis topic and outlines the purpose of the research, including research objectives, research questions and the structure of the thesis report.

1.1 Background

A people manager is an integral part of an organization, serving as a liaison between executives and employees. In the modern workplace, managers are expected not only to possess subject matter expertise but also to act as effective leaders, coaches, and mentors for their teams.

Employee performance management is a critical function of people management. It is defined as “a continuous process of identifying, measuring, and developing the performance of individuals and teams, and aligning their performance with the strategic goals of the organization” (Aguinis, 2013).

According to a comprehensive review by McKinsey, organizations that prioritize performance of their employees demonstrate a fourfold increase in the likelihood of achieving superior business outcomes relative to their counterparts. Such organizations report an average of 30 percent higher revenue growth and 5 percent lower employee attrition. Furthermore, companies that emphasize employee development and organizational health experience improvements in workplace culture, collaboration, innovation, and sustained competitive performance. These research-backed benefits highlight the strategic importance of implementing effective employee performance management systems within organizations (Lasa, & Pedroni, 2024).

At the beginning of the performance management period, managers and employees collaborate to set individual performance goals and priorities. Throughout the year, performance is monitored by collecting relevant data including goal achievement, innovation, teamwork, and individual contributions. To conclude the

performance cycle, managers evaluate individual performance and provide feedback. Performance assessments are directly linked to competence development plans, job promotions and compensation adjustments (Aguinis, 2013).

Preparing accurate data for the performance management process is a complex and tedious task that managers need to handle along with their other responsibilities. The absence of a standardized framework for defining individual performance factors and gathering relevant data further complicates the process. Additionally, managers supervise large number of employees, making the collection, maintenance and assessment of the performance data increasingly challenging.

Given these challenges, the manager's role becomes demanding, often affecting the quality of performance management and leading to lower employee satisfaction and retention. Managers are required to invest additional effort and time, which can negatively impact their work-life-balance and increase stress levels. Therefore, the implementation of automation in performance data collection and assessment may offer a promising approach to improving the efficiency, accuracy, and overall quality of employee performance management.

1.2 Objective of the Research

Traditional performance management systems are relied on annual reviews, 360-degree feedback from co-workers, rating systems, and manager's feedback. This approach presents several disadvantages, such as conscious and unconscious biases and inconsistencies in evaluations, resulting into inaccuracies in measuring, monitoring and optimizing employee performance.

The objective of this thesis is to identify challenges faced by managers in collecting employee performance data within Information Technology (IT) companies. This involves assessing current performance data collection systems and identifying inaccuracies in the feedback process. The study also includes identifying main factors affecting the efficiency and accuracy of employee performance management systems. The research data is collected through a survey questionnaire and interviews with people managers.

Artificial Intelligence (AI) is defined as “a technology that enables computers and machines to simulate human learning, comprehension, problem-solving, decision making, creativity and autonomy” (Stryker & Kavlakoglu, 2024).

The study further explores the potential of leveraging AI and generative AI capabilities, along with managerial perceptions of their adoption in performance management systems. These technologies can enhance efficiency by automating the collection, processing, and analysis of performance-related data and supporting managers in preparing performance documentation and creating competence development plans.

The research concludes with recommendations for enhancing reliability of performance data collection through the adoption of AI-based technologies.

In this thesis, Generative AI is used for grammatical correction and refinement of phrasing in author-composed paragraphs to enhance clarity and ensure alignment with academic writing standards. Additionally, AI was applied to adjust image brightness in data analysis figures without altering the underlying content.

1.3 Research Questions

The thesis is targeted at getting answers to the main question below:

What are the main challenges faced by managers in the employee performance data collection?

The main research question is assisted by the following 3 sub-questions:

1. What methods and metrics are currently used by managers to collect employee performance data?
2. What are the common challenges managers face to ensure the accuracy of employee performance data?
3. What type of performance metrics can AI based techniques effectively collect, analyse and present to managers for decision making?

1.4 Structure of the Thesis

The thesis consists of five chapters: Introduction, Theoretical Framework, Research Methodology, Research Findings and Analysis followed by Discussion and Conclusion.

Chapter 1: **Introduction:** Introduction of the background and purpose of the thesis, highlighting its relevance and significance. It also presents the research questions guiding the study and provides an overview of the thesis structure.

Chapter 2: **Theoretical Framework:** This chapter covers the theoretical framework of the performance management systems, including key theories and the steps in performance management process. It also examines common biases and inaccuracies in these systems. In addition, the chapter introduces fundamental concepts of Artificial Intelligence (AI) and reviews existing literature on implementing AI in the performance management.

Chapter 3: **Research Methodology:** This chapter outlines the research design and methods used to investigate challenges associated with employee data collection in performance management systems. It describes the mixed methods approach used for the research data collection, incorporating both qualitative and quantitative methods and details the strategies applied for data analysis.

Chapter 4: **Research Findings and Analysis:** This chapter presents analysis and key findings from the collected data with a focus on identifying the main challenges in employee performance data collection, the factors influencing inaccuracies, and identifying possible usage of AI techniques.

Chapter 5: **Discussion and Conclusion:** This chapter discusses the implications of the findings presented in Chapter 4. It offers recommendations for improving accuracy and efficiency in performance data collection through the integration of AI technologies and concludes the thesis by summarizing the key insights and recommendations for future research.

2 THEORETICAL FRAMEWORK

This chapter depicts the theoretical framework of performance management systems, including key theories and core components of the performance management process. It further explores common biases and inaccuracies within these systems. Additionally, the chapter introduces foundational concepts of Artificial Intelligence (AI) and reviews relevant literature on implementing AI in performance management.

2.1 What is Employee Performance Management?

Figure 1. Performance Management Cloud

Herman Aguinis (2013) defines performance management as “a continuous process that involves identifying, measuring and enhancing individual performance. It also encompasses aligning individual goals with strategic objectives of the organization” (Aguinis, 2013, p. 2).

1. Continuous Process: “It is ongoing process of setting goals and objectives of individuals, monitoring performance against the set goals and giving feedback and through coaching increasing individual performance” (Aguinis, 2013).

2. Aligning organizational strategic goals: Performance management needs to align individual assignments, tasks and achievements with the organization's strategic business goals to gain competitive benefits for the organization (Aguinis, 2013).

Armstrong (2009) emphasizes "the importance of aligning individual performance with organizational performance". Performance management is aimed at enhancing business outcomes by systematically monitoring employee performance within a clearly defined set of objectives and competency expectations. It is a process built on a shared understanding between employees and management regarding performance achievements. Additionally, it focuses on managing and developing individuals to meet both immediate and long-term organizational goals (Armstrong, 2009).

William Schiemann (2016) presents a framework based on people equity which is often abbreviated as ACE which consists of three fundamental factors:

1. Alignment(A): The extent to which individuals in the organization are aligned with the organizational goals, customer expectations, and the brand. A clear vision, effective communication, and strategy play important role in alignment of success factors.
2. Capabilities(C): The level of competencies, knowledge, and resources available to meet both internal and external customer expectations.
3. Engagement(E): It includes satisfaction, commitment and advocacy throughout the organization.

Research has proven that all three ACE factors are essential for business success, and that people should be synchronized around organization's purpose, principles and priorities. Furthermore, the ACE factors also affect employee retention and customer satisfaction, resulting into better financial business results (Schiemann & Dinsell, 2016).

The Institute of Personnel Management (1992) defines performance management as: "a strategy that relates to every activity of the organization set in the context of its human resources policies, culture style and communication systems. The nature of the strategy depends on the organizational context and can

vary from organization to organization" ("Institute of Personnel Management", 1992).

According to Peter A. Heslin, performance management encompasses a range of managerial initiatives designed to support and encourage employees in achieving their objectives. Traditionally, these initiatives have included formal performance appraisals, the provision of rewards and recognition for strong performance, and corrective actions to address underperformance. In modern, dynamic work environments, performance management also plays a critical role in promoting adaptability and continuous improvement. An essential element of effective employee coaching is the strategic use of goal setting. Research involving rehabilitation counsellors at a state agency indicated that feedback positively influenced work performance only among individuals with a strong commitment to their goals. Key factors guiding the effectiveness of goal setting include achievement of goals, complexity of work assignment, defining the goals, team-oriented goals, and the nature of feedback provided (Smither & London, 2009).

According to Peterson (2009), coaching is an essential element of performance management, emphasizing employee growth, increased satisfaction in the work, and improved performance. It may be delivered by managers, human resource professionals, or external coaching experts. Spontaneous development support has been a component of leadership development and performance management. The evolution of coaching in organizational contexts typically follows four stages: “ad hoc coaching initiated by individuals; managed coaching, often supported by a designated champion or sponsor; proactive coaching aligned with specific business needs; and strategic coaching, which is embedded within the organization’s broader talent management strategy” (Peterson, 2009).

Salas et al. (2009) emphasize that performance management is increasingly linked to managing team performance to maximize both individual and team effectiveness and efficiency. In modern work environments, the nature of work has undergone significant transformation: teams have become central to most organizational operations, tasks have grown in complexity, and the timeframes for task completion have shortened. To better leverage employee expertise, organizations have widely adopted team-based work structures, making teams critical to

the execution of organizational objectives. In such settings, performance management focuses on aligning team goals with the organization's strategic objectives and outcomes. However, integrating team related work setup introduces additional complexity to the performance management process (Salas et al., 2009).

Performance management in multicultural organizations presents additional challenges, as differences in language and culture can lead to misunderstandings particularly since communication is central to the process. Organizational values, which are shaped by culture, also vary across contexts. Culture can influence performance management at multiple levels, including business units, entire organizations, and national or regional contexts. Studies have examined the implications of eight cultural dimensions that influence national culture on performance management practices. These cultural differences affect various facets of performance management, such as the interpretation of organizational values and the manner in which feedback is communicated (Day & Greguras, 2009; Smither & London, 2009).

From a learning perspective, performance management serves as a catalyst for employee development by directing learning through performance goals, enhancing motivation through anticipated rewards, and providing guidance through structured feedback. In the context of rapid change and increasing complexity, it is widely recognized that both organizations and their employees must undergo transformation to remain competitive. Adopting a culture of continuous learning at the individual level is considered essential for driving organizational change. As employees learn, adapt, and engage with the organization and one another, the organization itself evolves. Learning facilitates adaptation to shifting conditions by fostering the acquisition of new behaviours, skills, competencies, and knowledge. It also supports personal growth by encouraging reflective thinking and emotional development (Sessa et al., 2009).

According to Armstrong and Baron (Armstrong, 2009, p. 335), performance management is fundamentally a people-oriented process rather than a system. They emphasize that effective performance management is an important responsibility of managers and should be considered a natural aspect of managing individuals

and teams. Performance management system enables managers to guide employee performance in adherence to the organization's purpose and values, and to identify solutions that work for the organization. Rather than being a paperwork focussed, the approach is results-oriented, aiming for visible improvements through clearly defined and achievable objectives. Additionally, performance management should be based on widely accepted organizational principles, with sufficient flexibility to adapt the organization-specific needs.

An effective employee performance management system helps in aligning individual objectives with organizational goals, thereby enhancing overall productivity and success. Organizations that foster a performance-driven culture tend to be more profitable and competitive. A focus on continuous learning and professional development not only supports individual career growth but also ensures a competent and committed workforce for achieving strategic outcomes. These advantages underscore the importance of implementing performance management systems within organizations.

2.1.1 Difference Between Performance Appraisal and Performance Management System

Performance appraisal is distinct from performance management. While performance appraisal typically involves an annual evaluation that highlights an employee's strengths and weaknesses, it often lacks ongoing feedback and coaching necessary for continuous development (Aguinis, 2019).

Research indicates that traditional performance appraisal systems often lack collaboration and innovation, reinforcing transactional relationships between employees and the organization. In the current business environment, where employee retention is a growing concern, organizations are increasingly moving away from appraisal systems. A key reason for this shift is the appraisal system's emphasis on financial rewards and punitive measures, which tend to focus on past behaviour rather than enhancing present performance or developing future talent both of which are critical for achieving long-term organizational goals. In contrast, modern performance management systems emphasize ongoing developmental conversations, shifting the focus toward building employee capabilities

to meet future organizational challenges. This reflects a broader transformation in approach from emphasizing accountability for past actions to fostering continuous learning and growth (Cappelli & Tavis, 2016).

In modern workplaces, performance management systems are increasingly favoured over performance appraisal methods due to their collaborative and development-oriented approach. Unlike appraisal systems that often emphasize evaluation, performance management fosters continuous feedback, goal alignment, and employee growth. This approach enhances employee engagement and retention, contributing to achieving strategic organizational objectives. As a result, performance management is considered a more effective tool for driving long-term success and workforce development.

2.2 Objectives of Employee Performance Management

The outcome of performance management is mainly used for salary revision, promotions, employee feedback, competence development and for identification of employee strengths and weaknesses. According to Agunis (2013), the performance management system serves six primary purposes for organizations (Aguinis, 2013):

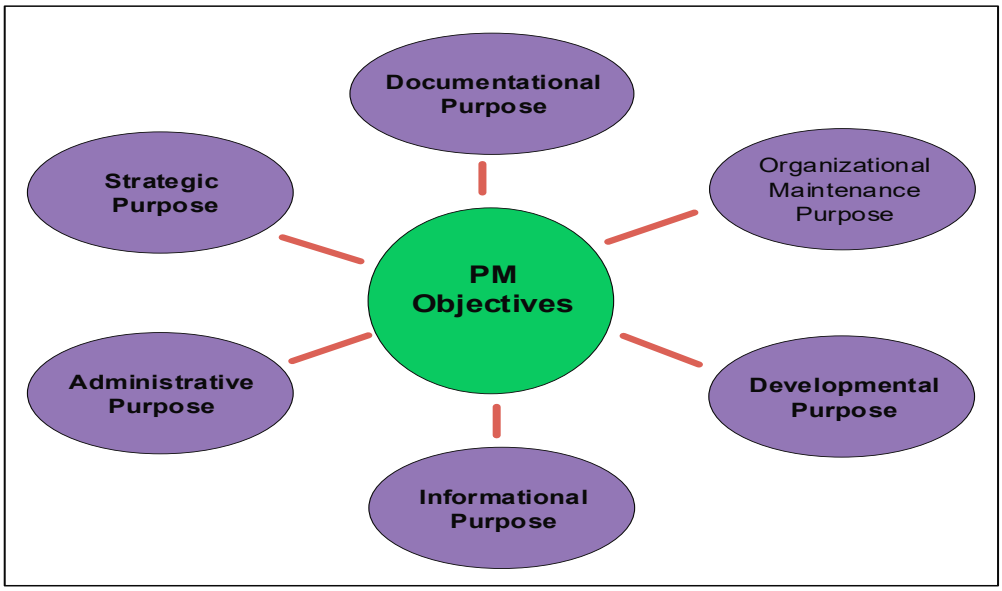

Figure 2. Six Objectives of Performance Management (Aguinis, 2013)

1. **Strategic Purpose:** A primary aim of performance management is to support senior leadership in achieving key organizational goals. This is accomplished by aligning individual goals with organizational goals, ensuring that employee behaviours and efforts are consistent with the organization's overall direction. As integral contributors to organizational success, employees must clearly understand how their roles align with broader business priorities. Another strategic function of performance management lies in its role in onboarding new employees. The system helps newcomers understand the types of behaviours and results that are valued and rewarded, thereby facilitating their understanding of organizational culture and strategic priorities. Additionally, performance data provides insights into the existing skill sets within the organization, enabling informed strategic decisions such as market expansion, investment in new product lines, and identifying areas for research and development (Aguinis, 2013).

2. **Administrative Purpose:** The performance management system generates reliable data that inputs a range of administrative decisions. These include promotions, salary revision, internal transfers, employment continuation or termination, recognition of high performance, identification of underperformance, change negotiations, and allocation of performance-based incentives (Aguinis, 2013).

3. **Informational Purpose:** Performance management serves as a vital communication tool within the organization. It conveys how employees are performing and identifies specific areas for improvement. Additionally, it communicates management's expectations and clarifies task priorities in alignment with business goals (Aguinis, 2013).

4. **Developmental Purpose:** A key outcome of performance management is the delivery of constructive feedback. Managers can use this feedback to coach employees in developing specific skills needed to address current performance gaps and prepare for future challenges. The system helps identify the root causes of performance deficiencies, individual strengths and weaknesses, and training requirements. Furthermore, it assists employees in setting career goals and choosing appropriate career paths (Aguinis, 2013).

5. **Organizational Maintenance Purpose:** Performance management data supports workforce planning by identifying skill gaps, optimizing employee potential, and prioritizing resource allocation. It also aids in planning future talent acquisition by forecasting skill needs. Moreover, the system can help identify potential trainers and mentors within the organization, facilitating internal skill-set-building and succession planning (Aguinis, 2013).

6. **Documentational Purpose:** Credible documentation generated through the performance management process is essential for organizational accountability. In cases of underperformance, documented feedback and improvement plans provide evidence to support managerial actions. This documentation is also critical in legal contexts, where it can substantiate decisions related to employment. Additionally, performance review records offer employees clear guidance on areas for improvement and the criteria used to assess their performance(Aguinis, 2013).

Employee performance management systems serve as a foundational tool for aligning individual contributions with organizational strategy. The above six objectives collectively highlight the value of implementing a comprehensive and structured performance management systems to develop productive, engaged, and strategically aligned workforce.

According to Rao (2016), performance management systems serve multiple objectives that are mainly categorized at the individual, team, and organizational levels (Venkateswara Rao & Venkateswara Rao, 2016).

At the individual level, Rao outlines several objectives of a performance management system aimed at continuous improvement in employee performance. These include providing clarity in job roles and responsibilities, recognizing individual strengths and areas for development, and identifying skill gaps to enhance overall performance. Additionally, the system is intended to promote self-awareness, which is essential for effective leadership and management practices. It also supports the development of problem-solving skills and encourages a culture of growth (Venkateswara Rao & Venkateswara Rao, 2016).

At the team level, the performance management system cultivates mutual respect and collaboration between team members and their managers. It facilitates mutual learning between senior and junior employees, thereby fostering a more cohesive and supportive team environment (Venkateswara Rao & Venkateswara Rao, 2016).

At the organizational level, the objectives focus on developing practices of planning work, managing time, and utilizing talent effectively. The system aims to build competence across individuals, teams, and the organization. It also serves as establishing a reliable database for rewards, promotions, recognition, and motivation. Furthermore, it supports mentoring and coaching initiatives for career development and performance enhancement, ultimately preparing employees to face future challenges and remain competitive (Venkateswara Rao & Venkateswara Rao, 2016).

Performance management systems play a critical role in enhancing organizational effectiveness across multiple levels. This holistic approach strengthens the organization's capacity to remain competitive and adapt to future challenges.

2.3 Characteristics of Ideal Performance Management System

According to Aguinis (2013), “the model performance management system should exhibit several key characteristics to ensure effectiveness, fairness, and alignment with organizational goals”. However, it is important to acknowledge that practical constraints such as organizational priorities, budgetary limitations for training, and national/country level labour laws may constrain the implementation of such an ideal system. Cultural differences also play a significant role: for instance, in some regions, collective achievement is more highly valued than individual performance, while in others, outcomes may be prioritized over behaviours. Furthermore, in organizations with rigid hierarchical structures, approaches like 360-degree feedback may encounter resistance or prove ineffective (Aguinis, 2013).

One fundamental attribute is **strategic congruence**, which ensures that individual goals are aligned with departmental objectives and the broader organizational strategy. In addition, **context congruence** recognizes the need to consider organizational culture and regional cultural norms while designing performance systems. For example, collectivist cultures may de-emphasize individual appraisal in favour of team-based evaluations (Aguinis, 2013).

The principle of **thoroughness** emphasizes that all employees, including those in managerial roles, should be evaluated across the full spectrum of their job responsibilities. Assessments should cover the entire review period rather than focusing on recent performance alone. Moreover, feedback must address both strengths and areas for improvement to provide a comprehensive view(Aguinis, 2013).

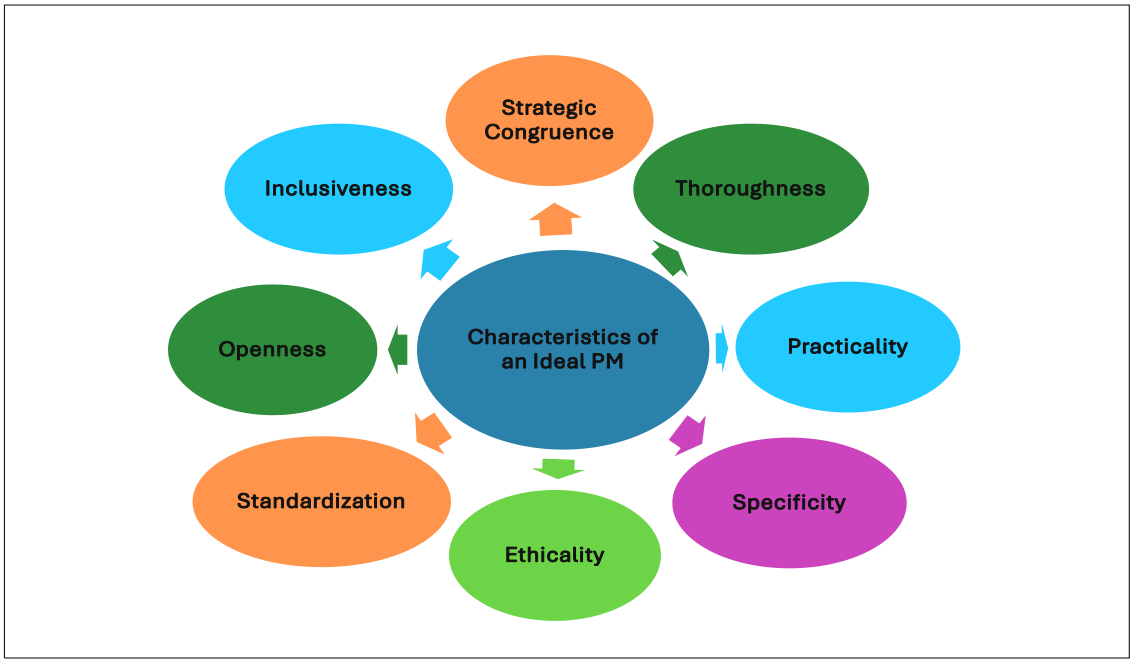

Figure 3. Characteristics of an Ideal PM System (Aguinis, 2013)

Practicality is another essential characteristic, ensuring the system is cost-effective, user-friendly, and not overly burdensome. The benefits of implementing the system should outweigh the associated costs and time investments. Closely related to this is **meaningfulness**, which requires that performance metrics be relevant to the employee's actual job duties. Reviews should occur regularly typically through informal quarterly checks and a formal annual evaluation. Im-

portantly, the results of performance assessments must inform administrative decisions such as employee promotions, salary changes, and development opportunities. Employees are reluctant in engaging meaningfully in the process in case they do not perceive tangible outcomes tied to their evaluations (Aguinis, 2013).

Specificity is critical in establishing clear expectations and transparency in performance measurement. An effective system clearly differentiates between effective and ineffective performance, offering actionable insights for both recognition and corrective measures. Furthermore, **reliability** requires that performance data be accurate and consistent, minimizing discrepancies in evaluations from different sources (Aguinis, 2013).

The principles of **acceptability and fairness** ensure that employees perceive the system as fair by all participants. Performance ratings and corresponding rewards should reflect actual contributions and monitored performance. Perceived discrepancies such as mismatches between performance and rewards can significantly undermine trust in the system (Aguinis, 2013).

Inclusiveness advocates for input from all stakeholders impacted by an employee's work. This may include peers, subordinates, supervisors, and even customers. Additionally, incorporating self-assessments and employee feedback into the design of performance criteria supports transparency and reduces the potential for surprise during reviews. Consideration of diverse cultural perspectives is also important in ensuring inclusiveness (Aguinis, 2013).

Openness refers to the transparency of the entire performance management process. Performance discussions should be ongoing and characterized by two-way communication, where employees are informed about their progress and feel their views are acknowledged. Expectations and evaluation criteria must be clearly communicated at the beginning of the performance cycle. Another important characteristic is **correctability**, which provides a mechanism for addressing potential errors or misjudgements in the evaluation process. This may include formal appeals processes or opportunities to revise evaluations based on new information or misunderstandings (Aguinis, 2013).

Standardization ensures consistency in evaluation criteria and processes across departments and teams. Standardized systems facilitate more accurate calibration and comparison of performance outcomes, reducing bias and subjectivity (Aguinis, 2013).

Finally, **ethicality** is a cornerstone of a trustworthy system. Performance evaluations must adhere to ethical standards, with supervisors expected to set aside personal biases. Moreover, the confidentiality of employee performance data and associated decisions such as ratings and rewards must be protected (Aguinis, 2013).

While Aguinis (2013) presents a comprehensive model for an ideal performance management system, its practical implementation must be tailored to organizational needs and cultural contexts. Factors such as budget constraints, legal regulations, and regional values can significantly influence how these systems are designed and implemented. I believe that characteristics like strategic alignment, fairness, inclusiveness, and transparency are essential, but they must be balanced with feasibility and cultural sensitivity to ensure effectiveness.

2.4 Benefits of Performance Management Systems

A performance management system can provide valuable benefits for employees and organizations (Aguinis, 2013; Armstrong, 2009; Venkateswara Rao & Venkateswara Rao, 2016). These benefits span motivational, developmental, operational, and strategic dimensions:

1. **Enhanced Motivation to Perform:** Performance management systems contribute to increased motivation by providing feedback on achievements and recognizing employee contributions through rewards, promotions, and recognition. These extrinsic motivators can foster intrinsic motivation and a deeper passion for work.
2. **Improved Self-Esteem:** Constructive feedback on performance enhances employees' self-confidence. Feeling valued and respected within the organization promotes greater job satisfaction and personal fulfilment.

3. **Greater Managerial Insight into Subordinates:** The process enables managers to build more productive relationships with employees and develop a better understanding of their skills, contributions, career aspirations, and work preferences. This knowledge supports more effective allocation of tasks and alignment of responsibilities with individual strengths.
4. **Clarity in Job Roles and Performance Criteria:** Performance management systems define clear expectations and competencies associated with each role. Employees acquire a better insight into their responsibilities and what is required to succeed and advance within the organization.
5. **Enhanced Self-Insight and Development:** Employees are better able to identify their strengths and areas for improvement. They gain clarity on which tasks are most valued and how their roles contribute to broader business goals, guiding their development strategies.
6. **Fair and Informed Administrative Decisions:** Objective performance data supports more equitable decisions regarding promotions, salary increases, transfers, and corrective actions. The system enhances managerial confidence and credibility in decision-making.
7. **Clear Organizational Goals:** By aligning individual objectives with organizational and unit-level goals, performance management promotes transparency and communication. Employees develop a stronger sense of ownership and understand their contribution to the organization's success.
8. **Improved Employee Competence:** Ongoing performance tracking and targeted development initiatives contribute to overall improvements in employee capability. Feedback often results in development plans and specialized training that enhance individual performance over time.
9. **Reduction in Employee Misconduct:** Clear accountability mechanisms and regular monitoring help reduce instances of misconduct. Incorporating peer feedback adds an additional layer of accountability, promoting collaboration and professional behaviour.
10. **Legal Safeguards and Compliance:** Documented performance data supports legal compliance regarding fairness and equity in employment decisions. This data is especially valuable in defending against legal claims related to low performance or discriminatory practices.

11. **Timely Differentiation Between High and Low Performers:** Performance management systems facilitate early identification of both high and underperforming employees, enabling timely interventions and targeted support or recognition.
12. **Improved Communication of Managerial Expectations:** The system ensures that supervisors communicate performance standards and expectations more clearly, offering employees valuable insights and validation through regular feedback discussions.
13. **Facilitation of Organizational Change:** Performance management can support organizational transformation efforts, such as shifting toward a more customer-centric or quality-focused culture. It also aids in workforce planning, including training needs assessment, restructuring, or cost-reduction strategies.
14. **Increased Motivation, Commitment, and Retention:** When employees recognise the performance management system as fair and supportive, it fosters greater trust, organizational commitment, and intent to stay. Engagement in personal development is often prioritized over job turnover.
15. **Encouragement of Voice Behaviour:** A transparent and equitable performance system empowers employees to share ideas, challenge existing processes, and contribute to innovation without fear of reprisal, reinforcing a culture of continuous improvement.
16. **Enhanced Employee Engagement:** An effective performance management system fosters engagement by aligning employee efforts with organizational goals, enhancing passion for work, and promoting a sense of purpose and ownership.

Implementing an effective performance management system offers substantial benefits that extend beyond individual evaluations to support organizational growth and sustainability. It enhances employee motivation, engagement, and development by providing clear expectations, constructive feedback, and recognition. Moreover, it enables fair and informed administrative decisions while fostering a culture of accountability, continuous improvement, and strategic alignment.

2.5 Drawbacks of Poor Implementation of Performance Management

Poorly designed and inaccurately implemented performance management systems can result in several negative consequences for both employees and organizations. One significant outcome is increased employee turnover, particularly when the system is perceived as unfair or biased, resulting to employee dissatisfaction and voluntary exits. Inaccurate or inappropriately delivered feedback can lower employees' self-esteem and contribute to resentment towards management. Furthermore, substantial time and financial resources invested by management, HR professionals, and employees may be wasted if the process lacks quality and accuracy (Aguinis, 2013).

Figure 4. Effects of Poor Implementation of Performance Management

Damaged relationships between managers and employees, as well as among peers, may arise due to perceived unfairness or poor communication. When employees feel that their efforts are not proportionately recognized or rewarded, their motivation to perform may reduce. This loss of trust in the system can also contribute to employee burnout, job dissatisfaction, and reduced organizational commitment (Aguinis, 2013).

Additionally, the lack of objective and transparent performance evaluations may lead to ambiguity in career progression and limit professional development opportunities. From a legal standpoint, unfair performance assessments increase the risk of litigation, as employees may challenge decisions perceived as discriminatory or unjustified. Ultimately, these issues can undermine overall organizational performance by weakening employee engagement, morale, and productivity (Aguinis, 2013).

Human Resources and senior leadership must actively monitor and continuously improve the performance management system to mitigate the risks associated with its poor execution. Key indicators such as frequent employee feedback, engagement levels, sentiment analysis, departmental goal achievement, and employee turnover rates should be systematically monitored. These metrics provide valuable insights into the system effectiveness and help ensure alignment with organizational objectives and employee development needs.

2.6 Employee Performance Management Process

This section outlines a typical performance management process, based on the author's professional experience of more than 20 years across multiple large organizations.

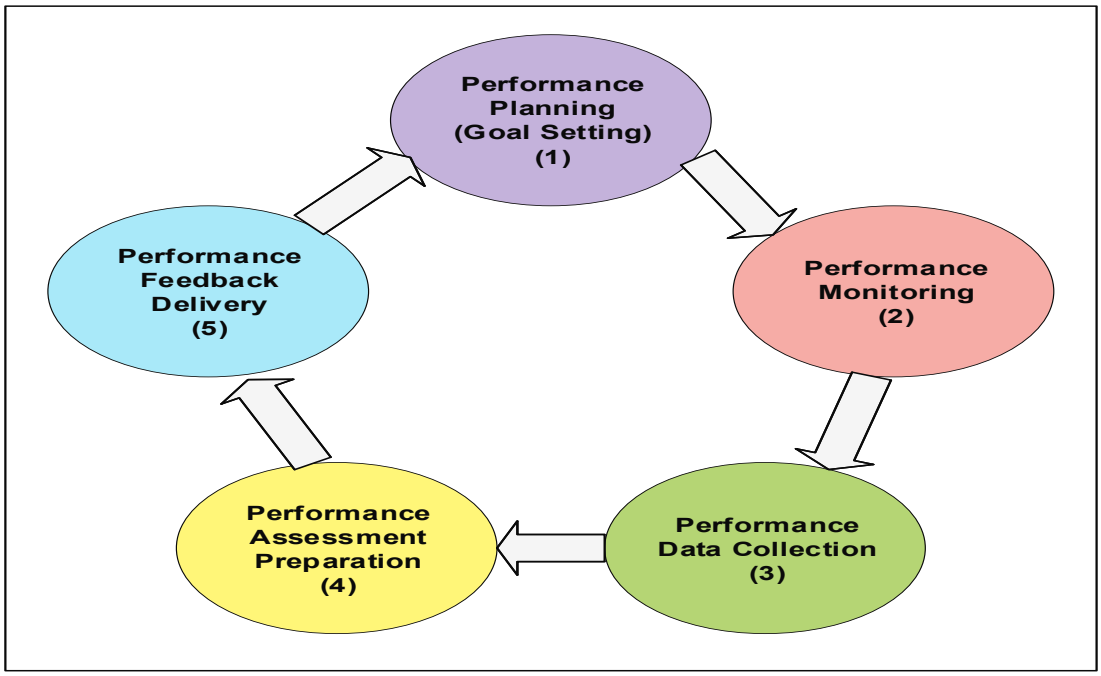

Figure 5. Typical Performance Management Cycle

2.6.1 Performance Planning (Goal Setting)

Performance planning marks the initial phase of the performance management cycle, encompassing both organizational and individual goal-setting processes.

1. **Business Goal Setting:** At the organizational level, top management defines strategic business objectives, including financial targets, product development roadmaps, and annual sales targets. Additional metrics often include quality improvement initiatives such as defect reduction and innovation benchmarks, including targets related to intellectual property (IP) creation and patent filings. Objectives related to operational efficiency, the adoption of new methodologies, and technological advancements are also established. These goals are aligned with the organization's overall strategy, values, and objectives. Notably, employee bonus structures are frequently tied to the achievement of these business goals.

   Once formulated, these organizational goals are communicated throughout the company, forming the foundation for cascading individual objectives.

2. **Individual Goal Setting:** Individual goal setting represents a critical early phase in the performance management process. These goals set expected outcomes and the way they are to be achieved by each employee. Goal setting considers the individual's skill set, project opportunities, and broader business needs. Employee preferences and career aspirations are also considered, including whether the individual intends to continue as a technical contributor or transition into managerial or leadership roles.

   Employee goals are typically established with an emphasis on career growth. Short-term goals may focus on immediate project deliverables and targeted performance improvements. Long-term goals often include the development of soft skills such as leadership, negotiations, team collaboration and domain-

specific competencies, including technological proficiency, continued education, or cross-functional experience through job rotations (Cadwell & Cadwell, 2002).

Managers and employees engage in structured meetings for deciding individual goals at the beginning of the performance year. This dialogue facilitates mutual understanding and promotes goal alignment. Goals are then documented in the organization's designated performance management system, which is accessible to both the manager and employee for continuous monitoring and tracking.

Clarity regarding how performance outcomes will be assessed is a key aspect of the goal-setting process. Managers define measurable indicators to ensure transparency and accountability. Furthermore, they are trained to incorporate diversity and inclusion principles during goal setting, ensuring equal and inclusive performance planning practices.

The definition of effective performance goals is essential to a successful performance management system. The **SMART** framework which is commonly used in goal setting summarizes these attributes. SMART stands for “**Specific**, **Measurable**, **Achievable**, **Realistic**, and **Time-bound**”, serving as a guideline for creating effective performance objectives (Shapiro, 2017). The characteristics of goal setting are listed below:

- Alignment with organizational strategy and goals
- Specific and Measurable: Clearly articulated goals that include measurable criteria to facilitate objective assessment and progress tracking
- Time-bound with clear deadlines
- Achievable but challenging
- Future-oriented: Designed to address current performance and foster long-term development and future readiness
- Tailored to the individual’s role, competencies, and career aspirations
- Well-Documented and clearly understood by both manager and employee to avoid ambiguity and misalignment

According to HBR study (Shapiro, 2017), performance goals are typically derived from multiple sources, including

- Organization, department plans and strategy
- Goals from the previous performance period and those linked to critical job skill requirements
- Actions and feedback from previous performance reviews and discussions.

2.6.2 Performance Monitoring

“Performance management is a year-round process and not a once-a-year event”. Continuous monitoring and timely feedback are essential components to ensure alignment with goals and to prevent unexpected outcomes during formal evaluations (Armstrong & Baron, 2005).

Regular monthly or quarterly follow-ups, typically conducted between managers and employees serve to review progress against set performance objectives. These discussions also provide an opportunity to reassess and adjust goals in response to changes in projects, business priorities, or product roadmaps.

Performance monitoring involves more than tracking output; it also encompasses observations of employee behaviour, including collaboration within teams, contributions to team goals, and the demonstration of organizational values. When an employee’s performance deviates from expectations, managers are encouraged to engage in open dialogue to identify potential barriers such as skill gaps, resource limitations, or personal challenges. Supportive managerial involvement such as coaching and mentoring may be required to guide employees toward improvement. Constructive feedback plays a critical role in this process, offering specific, actionable insights aimed at fostering growth and correcting performance. Maintaining motivation and engagement through personal support is equally important, particularly during periods of underperformance.

2.6.3 Employee Performance Data Collection

The collection of reliable performance data is essential for effective performance assessment. Key criteria commonly assessed include an individual's contribution to team objectives, achievement of project milestones, problem-solving capabilities, quality and complexity of work, and additional responsibilities. These quantitative indicators are complemented by qualitative assessments of behavioural aspects, such as team collaboration, mentorship of junior colleagues, customer satisfaction, innovation, and proactiveness in making positive changes.

Managers, who are often actively involved in project execution, have the advantage of observing employee performance firsthand. This involvement enables them to collect accurate and credible data, which is essential for making well-informed decisions during performance evaluations. High-quality data also enhances the effectiveness of feedback discussions, particularly when addressing low performance cases. Employees are more likely to accept critical feedback when it is supported by concrete, fact-based evidence.

2.6.4 Performance Assessment by Managers

Once performance data is collected, it is systematically analysed by managers in preparation for the formal feedback process. Human Resources (HR) typically provides the necessary tools, frameworks, and trainings to support managers in evaluating employee performance effectively. During the assessment phase, guidance from senior leadership and HR is considered particularly with respect to organizational policies on rewards, promotions, and performance improvement actions. At this stage, calibration processes are often conducted across departments to ensure consistency and fairness in performance ratings, and to address cases of underperformance.

Managers use the validated performance data to prepare feedback discussion and finalize performance ratings. The accuracy and credibility of the data gathered in earlier stages play a critical role in substantiating decisions regarding employee promotions, recognition, or the handling of low performance cases. Well-documented performance evidence also helps managers to address outliers and

provide justifications for their assessments, thereby contributing to a fair and objective performance management system.

2.6.5 Performance Feedback Delivery

Toward the end of the performance cycle, managers typically conduct one-on-one meetings with employees to deliver performance feedback and discuss development plans. These meetings also serve as a platform for communicating important decisions related to rewards, salary adjustments, and promotions. The effectiveness of this process relies heavily on the manager's communication skills and the clarity with which feedback is conveyed. It is essential that feedback is delivered in a manner that ensures the employee feels respected, valued, and motivated to work on the actions.

In culturally diverse workplaces, managers must be particularly mindful of cross-cultural communication sensitivities, as feedback may be interpreted differently across cultural backgrounds. Adapting feedback strategies to accommodate these differences is vital for maintaining a positive and inclusive work environment. A commonly employed technique is the "sandwich model" of feedback delivery, in which constructive criticism is positioned between positive comments, to promote receptiveness and reduce defensiveness.

The manager-employee relationship is vital for the accomplishment of this phase. Mutual trust and open communication form the foundation for delivering constructive, unbiased feedback that supports employee growth and promotes continuous performance improvement.

2.6.6 Performance Improvement Plan (PIP)

Addressing cases of underperformance is one of the most complex and sensitive characteristics of the performance management process. While the manager holds primary responsibility for identifying and assigning underperformance ratings, this process must be conducted in accordance with established human resource policies and local labour regulations. To ensure fairness and accountability, it is essential to maintain accurate documentation, including detailed records

of observed performance issues, meeting minutes, coaching efforts, and the support provided to the employee.

The implementation of a Performance Improvement Plan (PIP) serves as a structured mechanism to support employee development and performance correction. Throughout this process, a manager's **emotional intelligence** is particularly critical in handling difficult conversations, managing employee emotions, and offering empathetic support. The primary objective of the PIP is to foster improvement and retain existing talent, as replacing an employee involves significant time, financial cost, and training efforts.

2.7 Employee Performance Measurement Factors

Effective employee performance measures should be clearly related to individual results and observable behaviours. It is essential that these measures "are directly linked to the overall performance objectives of the organization". Furthermore, the outcomes being evaluated must fall within the employee's control and scope of work that should be mutually agreed upon performance targets. Competency expectations should be explicitly defined and understood by manger and employee. To ensure fairness and credibility, assessments must be based on credible and evidence-based data. Additionally, the measures must be objective in nature, minimizing the influence of personal bias and promoting consistent evaluation across individuals and roles (Armstrong & Baron, 2005).

2.7.1 Behavioural Approach

Borman and Dunnette(1975) recommended "inclusion of behavioural anchored performance measurement to mitigate common rating errors such as Halo effect and leniency bias in performance evaluations" (Borman & Dunnette, 1975).

Typical behavioural metrics considered for the evaluation are as follows (Rohitha, 2025):

- Monitoring individual attendance and working hours
- Punctuality and active participation in meetings and technical reviews

- Participation on organizational collaboration platforms (e.g., MS Teams, Viva Engage)
- Demonstrated proactiveness and teamwork skills
- Exhibiting leadership by anticipating and resolving issues
- Adaptability to organizational, project, and environmental changes
- Commitment to personal development and a growth mindset
- Alignment of employee work ethics with organizational values
- Effective communication within teams and across departments

Individual behaviour significantly influences team dynamics and overall organizational performance. For career advancement, organizations evaluate not only individual achievements but also collaborative efforts, a supportive nature, and adaptability to both internal and external changes. To be an effective leader, competencies such as strong communication skills, a positive attitude, and empathy toward team members are essential. Therefore, performance management systems should incorporate behavioural metrics to holistically assess employee contributions.

2.7.2 Results Approach

Employee performance is evaluated based on the achievement of predefined work-related objectives and measurable outcomes (Armstrong & Baron, 2005; Rohitha, 2025).

The following parameters can be considered to assess individual results:

- Achievement of quantifiable performance targets
- Willingness to take on additional responsibilities
- Contribution and impact at team and departmental levels
- Implementation of new methodologies and active involvement in change initiatives
- Timely completion of assigned tasks with acceptable quality standards
- Evaluation of work quality and completeness using defect tracking tools
- Demonstrating independence in task execution with minimal supervision
- Adherence to organizational processes and prescribed methodologies

- Customer feedback on deliverables, service quality, responsiveness, and support
- Innovation outputs, including intellectual property creation, patents, and technical publications

2.7.3 360-Degree Feedback Method

The 360-degree feedback method involves collecting employee performance data from various sources, including supervisors, peers, and, in some cases, external stakeholders such as customers. This approach provides a holistic and balanced perspective on an individual's performance, covering both technical competencies and interpersonal behaviours. Although this method is generally regarded as more accurate and robust due to its inclusivity, it also presents certain challenges. For instance, the process can be time consuming and administratively demanding. Moreover, its effectiveness may be compromised by issues of trust and openness, as employees may be hesitant to give real, critical feedback due to fear of repercussions or strained interpersonal relations. The lack of proper training in delivering constructive peer evaluations further degrades the quality of the feedback. Additionally, if anonymity is not properly maintained, the process may lead to breakdowns in working relationships and reduced collaboration. Therefore, while 360-degree feedback can significantly enhance the depth and reliability of performance assessments, its successful implementation requires careful planning, training, and safeguards to ensure confidentiality and psychological safety (Bourne & Bourne, 2012).

The most commonly employed methods for gathering employee performance data include questionnaires and individual interviews. **Questionnaires** involve the use of electronic tools or online survey platforms to collect structured performance data from multiple sources. These often include multiple-choice questions designed to assess individual behaviours and results in key performance areas. In some cases, open-ended questions are also included, allowing respondents to provide additional insights and detailed observations beyond the structured format. **Individual interviews** are frequently used to complement questionnaire data, serving as a follow-up mechanism to clarify responses or elaborate on find-

ings gathered through surveys. This method enables deeper exploration of employee performance and offers richer context for assessment (Lucia & Lepsinger-Griffith, 2009).

Figure 6. 360-degree Feedback System ("How to Get the Most Out of 360 Degree Performance Reviews", 2021)

The 360-degree feedback system is used for evaluating employees across both performance outcomes and behavioural dimensions. To ensure its effectiveness, it is essential that all participants are adequately trained to understand the context of the feedback, recognize potential biases, and appreciate the implications of their evaluations. Managers can safeguard the anonymity of responses by synthesizing feedback in a manner that preserves its core message, thereby mitigating risks commonly associated with this system.

2.8 Technology in Performance Management Systems

The organizations have tailored the tools to align with their specific needs and practices. Technology plays an active role in modern Performance Management Systems, supporting various stages of the process (Krauss & Snyder, 2009):

1. Preparation:

- Business goal mapping tools to align strategy and objectives
- Definition of individual position expectations and job responsibilities
- Collection of quantitative and qualitative performance data
- Market compensation analysis and benchmarking
- Access to performance management standards and processes
- Training for managers for handling performance management system

2. Performance Planning:

- Shared electronic platforms for collaboratively create a plan
- Notification systems for all the stakeholders on any data changes
- Alignment of performance plans and competencies with organizational training and opportunities

3. Performance Execution:

- Reporting of performance status, tracking achievements against goals
- Submission of requests and collection of feedback from relevant stakeholders
- Centralized storage of historical performance data
- Use of statistical tools to monitor employee performance trend

4. Performance reviews:

- Trainings for managers on best practices in conducting reviews
- Generation of performance reports and employee acknowledgement
- Competency development planning

The Human Resources (HR) department is responsible for administering employee performance management systems. In recent years, a wide range of performance management tools has emerged, offering customizable features tailored to the specific needs of organizations. Managing performance-related data, facilitating communication, and tracking goal progress are achieved using technology. Furthermore, there is considerable potential for integrating artificial intelligence (AI) technologies to automate and enhance the efficiency of performance management processes.

2.9 Current Challenges and Inaccuracies in Performance Management Systems

Performance assessment is inherently a judgment-based process rather than an exact science. It is susceptible to various biases and errors, as assigning ratings to individual performance is complex and can be influenced by subjective perceptions rather than objective evidence (Bourne & Bourne, 2012).

One of the most observed sources of dissatisfaction with performance management systems is the assignment of performance ratings. These ratings are formally recorded in personnel files and have a direct impact on an individual's career progression. However, assessing human behaviour and job performance poses significant challenges due to inherent subjectivity and bias (Venkateswara Rao & Venkateswara Rao, 2016).

These errors can be categorized as follows (Bourne & Bourne, 2012; Venkateswara Rao & Venkateswara Rao, 2016):

1. **Leniency Effect**: Some managers adopt an overly generous approach to performance ratings, believing that being favourable toward employees helps to develop goodwill. This can result in inflated ratings that do not reflect actual performance.
2. **Severity Effect**: In contrast, certain managers may be excessively strict, consistently assigning low ratings regardless of the employee's achievements or contributions.
3. **Central Tendency (Averaging Effect)**: Some managers avoid making extreme evaluations and tend to rate most employees at the mid-point of the scale, thereby failing to differentiate between high and low performers.
4. **Differential Effect**: Managers may show favouritism by assigning higher ratings to employees who share similar characteristics, backgrounds, or values. Conversely, they may also rate employees more favourably if those individuals exhibit traits the manager personally admires or lacks.
5. **First Impression Error**: Initial encounters between managers and employees can create lasting impressions that unduly influence subsequent evaluations, regardless of the employee's actual performance over time.

6. **Recency Effect**: This occurs when managers base their assessments primarily on recent behaviours or actions, without considering the employee's overall performance throughout the evaluation period.

Personal traits, beliefs, perceptions, and attitudes of managers play a critical role in how performance ratings are assigned, often leading to various forms of evaluation biases. Biases introduced through peer feedback and the competitive spirit among team members also contribute to inaccuracies. These biases can compromise the fairness and effectiveness of performance appraisals, emphasizing the need for more objective and structured evaluation processes.

Thomas Decotiis and Andre Petit (1978) identify key factors that influence the accuracy of performance ratings, including the rater's motivation, competence, and standardized practices. Managers who receive training on performance management systems are more likely to provide accurate and unbiased ratings. The organizational level of the rater also plays a significant role, as raters at different levels are likely to observe and evaluate distinct aspects of an employee's behaviour. The proximity of the rater to the ratee, in terms of hierarchical level, affects the accuracy of evaluations; closer alignment typically fosters better understanding of individual work responsibilities (DeCotiis & Petit, 1978).

The accuracy of performance assessments improves when managers possess subject matter expertise related to the employee's job functions and behavioural expectations. This expertise enables more informed and precise assessment of individual contributions. Furthermore, when managers are directly accountable for project deliverables and maintain active engagement with their team's daily activities, they are better positioned to deliver more accurate and comprehensive performance appraisals.

Performance management, despite being a critical function faces several challenges that can undermine its effectiveness (Morris, 2020):

1. **Lack of Strategic Alignment**: A fundamental issue is the absence of clearly defined organizational goals and the frequent changes of priorities.

Additionally, the misalignment between organizational objectives and individual goals leads to ambiguity and reduces the effectiveness of employee performance assessments.

2. **Limited Performance Monitoring and Communication**: In large teams, consistent performance tracking becomes difficult, often resulting in insufficient feedback and inadequate communication throughout the appraisal cycle. This impacts meaningful discussions on goal setting, progress tracking, and employee contributions.
3. **Inadequate Managerial Training and Process Alignment:** A common challenge is the lack of training for managers on core principles of performance management, including how to provide constructive feedback and guide employees through improvement processes. Without consistent understanding and alignment, there is a significant risk of inconsistent implementation of goal setting, monitoring, and evaluation practices.
4. **Low Employee Motivation and Engagement**: Employee dissatisfaction may result from inadequate recognition, limited rewards, and perceived unfairness in past evaluations. A lack of motivation and engagement can also be attributed to previous experiences of receiving inaccurate or unsubstantiated performance ratings.
5. **Resource and Time Constraints:** Managers often struggle to process large volumes of performance-related data due to limited time and resources. High workloads and competing priorities can result in low prioritization of the performance management process.
6. **Inconsistent Metrics and Standards:** A lack of standardized performance metrics and evaluation criteria undermines the fairness and credibility of the entire system. The absence of regular calibration across teams can lead to disparities in how performance is assessed and rewarded.
7. **Data Management and Analysis Limitations:** Effective performance management relies heavily on the availability of accurate and timely data. A key challenge lies in collecting, organizing, and analysing data in a way that generates actionable insights. Organizations often lack robust software systems that enable automated data collection, centralized information management, and comprehensive reporting capabilities.

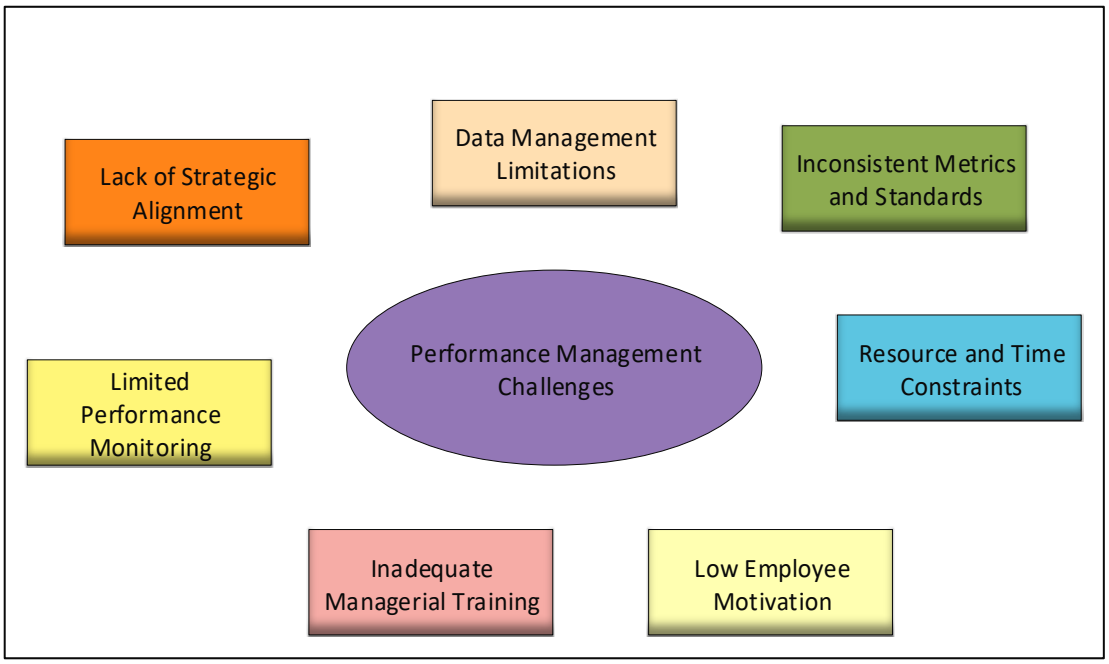

Figure 7. Challenges in Performance Management

According to (Admin, 2025), traditional performance management systems are often dependent on manual processes that require significant time investment, leading to inefficiencies and diminished employee engagement. Low levels of employee engagement are observed due to lack of positive employee experience throughout the performance management cycle. These systems frequently lack real-time, accurate data required for effective performance evaluation. Managers typically have limited access to critical performance insights and often rely on outdated data, spreadsheets, or manual data collection methods, resulting in inaccurate decision-making (Admin, 2025).

Automation in performance data collection is generally absent, which increases the administrative burden and reduces the accuracy of the data. The accuracy of performance data is further compromised by potential biases and the omission of key information from daily employee interactions that remain untracked. In addition, employees often receive inconsistent or irrelevant feedback, which undermines the purpose of performance reviews. The absence of personalized professional development plans further limits opportunities for individual growth, learning, and long-term career progression. Collectively, these limitations highlight the need for a more modern, data-driven, and employee-centric approach to performance management.

McKinsey's research highlights several critical challenges in the implementation of performance management systems. One key challenge is the lack of fact-based differentiation in performance ratings, leading to reduced credibility and effectiveness of the appraisal process. Furthermore, performance management often becomes a low-priority task for managers, addressed only at the end of the day and under significant time pressure. As a result, managers may lack the capacity to engage in thoughtful, meaningful performance discussions with their employees, undermining the developmental intent of the process (Weddle & Rahilly, 2024).

Accurate monitoring and documentation of individual performance are essential to substantiate feedback, particularly in cases involving high performers, underperformers, or when delivering critical evaluations. The integration of automation in data collection processes can enhance the credibility of performance data while reducing the administrative burden on managers. This technological support contributes to more objective and reliable performance assessments.

2.10 Artificial intelligence (AI)

2.10.1 What is AI?

Artificial Intelligence (AI) is "a branch of science and technology focused on the study and creation of intelligent systems". While human intelligence enables us to perceive, understand, predict, and interact with the world, AI extends beyond understanding these cognitive processes to developing machines and systems that can emulate such capabilities. As one of the most rapidly evolving fields, AI aims to design entities "capable of performing tasks that typically require human intelligence", such as playing games, proving mathematical algorithms, text generation, driving cars and many more activities (Russell & Norvig, 2016).

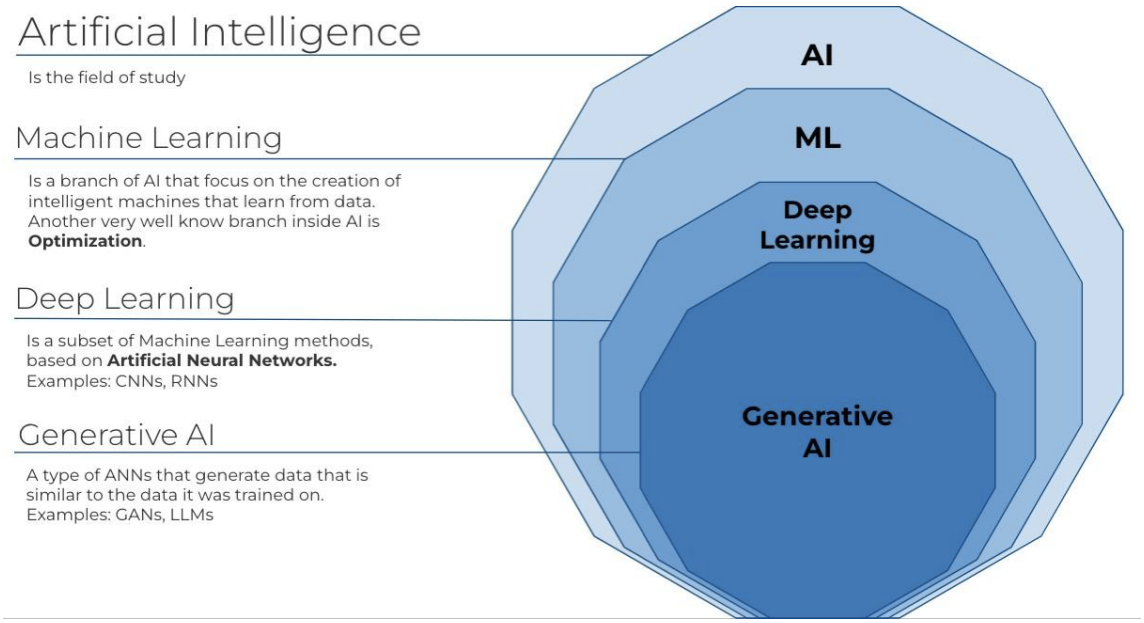

Figure 8. Artificial Intelligence (“Generative AI in Business,”, n.d.)

According to Haugeland (Haugeland, 1985) AI is defined as “The exciting new effort to make computers think, machines with minds, in the full and literal sense”. According to Rich and Knight (Rich & Knight, 1991) it is defined as “the study of how to make computers do things at which, at the moment, people are better.”

Neural network is the foundation of AI which is derived from Neuroscience concepts. Neuroscience is the scientific study of how the human brain processes information. The brain “is composed of nerve cells, known as neurons”, which transmit signals throughout the body to enable various physiological and cognitive functions. Each neuron can form connections with approximately 10 to 100,000 other neurons at synaptic junctions. These neural signals not only regulate short-term brain activity but also facilitate long-term modifications in neural connectivity, contributing to learning, memory, and behavioural adaptation (*Brain Basics*,n.d.).

According to Chapter et al. (2009), the conceptual foundations of artificial intelligence (AI) date back to 1943, when Warren McCulloch and Walter Pitts introduced a model of artificial neurons. Drawing upon foundational knowledge from three key domains neurophysiology, Russell and Whitehead’s system of reasoning, and theory of computation, which conceptualized neurons as binary units that operate as on/off switches in response to input from neighbouring neurons. Their

work demonstrated that networks of such neurons could compute any computable function and suggested the potential for these networks to learn, laying early groundwork for neural networks and machine learning (Chapter et al., 2009).

Alan Turing's contributions had a significant impact on the progress of AI. He introduced the concept of the Turing Test to evaluate machine intelligence and contributed foundational ideas in machine learning, genetic algorithms, and reinforcement learning (Haugeland, 1997).

In a significant milestone, researchers at Carnegie Tech developed the Logic Theorist (LT), a reasoning program capable of symbolic, non-numeric thought. The LT program addressed the mind-body problem and successfully proved many theorems from Russell and Whitehead's *Principia Mathematica*, marking a pivotal moment in symbolic AI (MODEL, 1963).

Throughout 60 years history of computer science, AI research primarily emphasized the development of algorithms. However, in the 21st century, the importance of data has become increasingly evident. With advances in computational power, particularly the availability of parallel processing through graphics processing units (GPUs), and the availability of large datasets, AI research and applications have gained significant momentum. Modern programming languages and operating systems have further accelerated the rollout of AI (Peddie, 2022).

AI has wide range of applications including autonomous vehicles, speech recognition, automated planning and scheduling, game playing, spam detection, natural language processing and machine translation amongst others (Chapter et al., 2009).

Artificial intelligence (AI) is poised to transform technology and become an integral part of everyday life due to its numerous benefits. By automating routine and time-consuming tasks, AI enables individuals and organizations to focus on more innovative work. The effective integration of AI across various sectors is essential for maximizing its potential. While AI may displace certain jobs, it also fosters

innovation and creates new opportunities, contributing to technological advancement and economic growth.

2.10.2 Generative AI

“Generative AI is a technology that produces synthetic outputs including content, designs, and models from learned data patterns, transforming creativity, business processes and societal structures” (Feher, 2025).

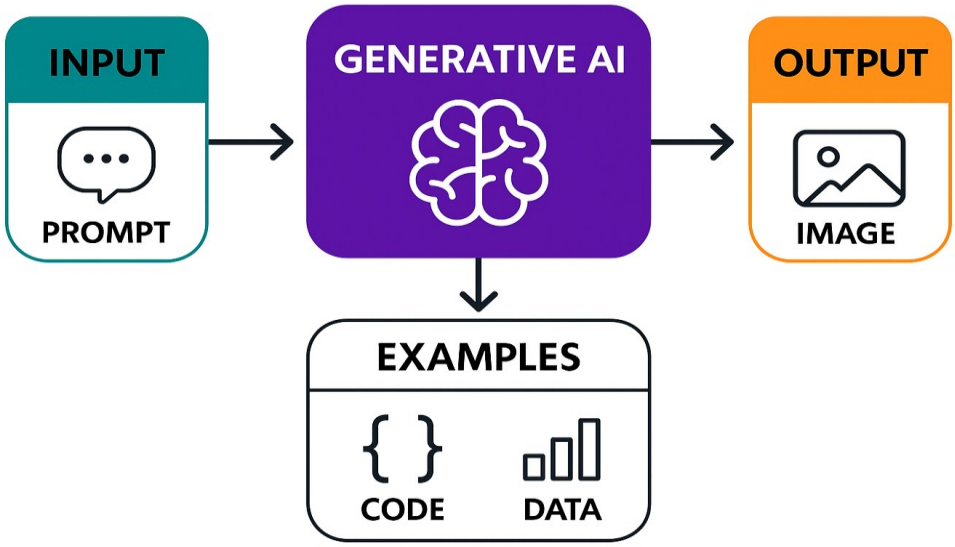

Figure 9. Generative AI Concept (Source: MS Copilot Generated Image)

Unlike traditional artificial intelligence, which primarily focuses on analysing data to generate predictions or classifications, generative AI can produce new content such as images, text, audio, and code. A key enabler of this capability is Natural Language Processing (NLP), which equips machines with the ability to process and comprehend human language in a meaningful way. NLP facilitates more human-like interaction between users and AI systems, thereby enhancing the accessibility and effectiveness of generative AI tools (Bahree, 2024).

The development of Large Language Models (LLMs) marks a paradigm shift in the design and functionality of digital platforms and services. This advancement

is not only revolutionizing content creation processes but is also influencing societal transformation (Feher, 2025).

As a disruptive technology, generative AI is anticipated to significantly reshape the landscape of the information technology industry in the near future. Prominent examples of generative AI agents include ChatGPT, GitHub Copilot, and Google Gemini. Sectors such as banking, healthcare, and education are witnessing significant changes as generative AI is integrated into workflows, offering enhanced efficiency, personalization, and innovation.

2.10.3 Ethical Considerations of AI

Ethical risks associated with artificial intelligence (AI) are a significant concern due to their potential to cause physical and psychological harm, infringe upon individual autonomy and privacy, undermine trust and respect, disrupt social relationships and cohesion, and exacerbate issues related to social justice and fairness. Several characteristics inherent to AI technologies contribute to these ethical challenges (Chapter et al., 2009; Douglas et al., 2025):

1. **Opacity of decision-making:** Many machine learning (ML) systems operate as "black boxes," makes challenging for developers and users to comprehend the rationale behind their decisions. This lack of transparency can reduce the perceived trustworthiness and accountability of AI systems.
2. **Physical Harm Risks:** When AI is embedded in robotic systems with control over physical operations, erroneous decisions may lead to physical harm, raising concerns about safety and liability.
3. **Bias in Training Data:** Biases in training data can be reproduced in AI outputs, leading to unfair or discriminatory outcomes. Such biases threaten public trust, social cohesion, and the principles of equality and justice.
4. **Responsibility Gaps:** Delegating decision-making to AI may create responsibility gaps, particularly when the basis for decisions is uncertain or opaque, complicating efforts to assign accountability.

5. **Impact on Individual Rights**: AI-driven decisions that significantly affect individuals' lives such as those involving employment, healthcare, or financial services can be ethically problematic if people are not given sufficient information or recourse to challenge those decisions.
6. **Social media and Mental Health**: AI algorithms used to optimize user engagement, especially on social media, may prioritize extreme or sensational content. This can increase user radicalization and mental distress, ultimately undermining human relationships and social cohesion.
7. **Socio-Economic Disruption**: AI-driven automation may lead to losing significant number of jobs across various segments, threatening livelihoods and creating inequality in the society. While some argue this may result in increased leisure time, the loss of meaningful work can also impact individuals' sense of purpose, identity, and well-being.
8. **Dual-Use Risks**: The dual-use nature of AI technology poses a risk that it may be deployed toward harmful purposes, including surveillance, misinformation, or autonomous weapons, raising critical ethical and societal concerns.

The use of generative AI introduces additional ethical challenges that include model reliability, content authenticity, copyright, plagiarism and environmental effects (Bahree, 2024).

To address these ethical risks, organizations such as Microsoft, IEEE, and others have established frameworks for responsible AI. These frameworks are "focussed around six core values: fairness, reliability and safety, privacy and security, transparency, accountability, and inclusiveness" (*Responsible AI*, n.d.).

The ethical problems associated with AI are deeply concerning and require proactive attention. The opaque nature of many AI systems undermines transparency and accountability, making it difficult to trust their decisions. Furthermore, biases in training data and the potential for AI to cause physical or psychological harm highlight the need for robust safeguards. To mitigate these risks, it is essential to adopt responsible AI tools that incorporate fairness, safety, privacy, and inclusiveness in both the design and deployment of AI systems.

2.11 Current Research on AI in HR Management

Sharma and Hosein (2020) conducted a study to explore the correlation between traditional performance assessment methods and data-driven approaches. Their findings indicated that there was no real correlation or agreement between the outcomes generated by the two methods. Based on this observation, they proposed the automation of employee performance tracking by monitoring parameters such as attendance, organization-specific key performance indicators (KPIs), and instances of process violations. The authors suggested that such an automated, data-driven system could more effectively identify early indicators of employee burnout and dissatisfaction, thereby enabling timely interventions and more accurate performance evaluations (N. Sharma & P. Hosein, 2020).

Sampath et al (2024) proposed an AI-powered employee performance rating system that integrates data-driven analysis and AI algorithms to enhance the performance evaluation process through real-time feedback. The system aims to improve objectivity, fairness, and efficiency by utilizing algorithmic analysis to minimize biases commonly found in traditional HR practices. Natural Language Processing (NLP) techniques are employed to interpret written feedback and communication effectively (K. Sampath et al., 2024).

Medhumita et al. (2024) proposed leveraging artificial intelligence (AI) capabilities to effectively align individual and team goals with broader strategic objectives. Their research demonstrates that the application of AI in human resource management facilitates the automation of routine tasks, enhances data analysis, reduces biases, and provides real-time feedback. Furthermore, AI enables organizations helps to handle dynamic business environment and supports a more holistic approach to talent management. Their research underscores significant challenges in AI implementation, particularly the ethical concerns around sensitive employee data related to privacy and security. Additionally, the integration of AI systems may encounter resistance from employees, AI models are also prone to biases present in historical datasets, and the complexity of integrating AI technologies with existing HR infrastructure (Madhumita et al., 2024).

Oladele (2024) proposed an AI based data-driven implementation in performance management analytics, emphasizing the potential of AI-powered systems to deliver quantitative insights into employee performance. However, the author cautioned against the overreliance on numerical metrics, noting that such an approach may undervalue qualitative feedback and human judgment. The study underscores “the importance of maintaining a balanced approach that integrates data-driven insights with the nuanced understanding derived from qualitative assessments and contextual human evaluation” (Oladele, 2024).

The recent research demonstrates that AI-powered systems hold significant potential to enhance employee performance evaluation by improving objectivity, fairness, and efficiency through real-time, data-driven insights. Approaches proposed by Sampath et al. (2024) and Madhumita et al. (2024) present AI’s capability of automating routine HR tasks, aligning goals with organizational strategy, and interpreting qualitative feedback using NLP.

However, these studies also reveal critical challenges, including privacy concerns, integration complexity, and the possibility of algorithmic bias from historical datasets. Therefore, the most effective performance systems will combine the accuracy and efficiency of AI with the depth and experience of human evaluation to mitigate the limitations of both traditional and fully automated systems leading to more balanced assessments.

3 RESEARCH METHODOLOGY

This chapter outlines the research methodology applied in this study to identify key challenges in employee performance data collection during performance management. The research methodology comprises of hypothesis, research design, research data collection and analysis methods.

3.1 Hypothesis

A **hypothesis** is “a testable prediction formulated in response to a specific research problem. It serves as a foundation for scientific inquiry by providing a clear direction for investigation and guiding both data collection and analysis processes” (Hassan, 2024).

The following hypotheses are framed based on the research questions and theoretical research:

1. Traditional methods and metrics for evaluating employee performance often lack the capacity to provide a comprehensive and unbiased assessment.
2. Managers face common challenges in ensuring the accuracy of performance data, including cognitive biases, time constraints, and the lack of standardized evaluation system.
3. Integrating AI techniques into employee performance management has the potential to improve both the accuracy and efficiency of performance data collection.
4. AI-based techniques can effectively collect, analyse, and present performance metrics, thereby supporting more informed managerial decision-making.

3.2 Research Design

A mixed methodology is adopted in this research, incorporating both quantitative and qualitative approaches. This integrated approach provides a more comprehension for the challenges in performance management process by combining

numerical data with in-depth insights from managers in the IT industry (Chandra & Hareendran, 2017).

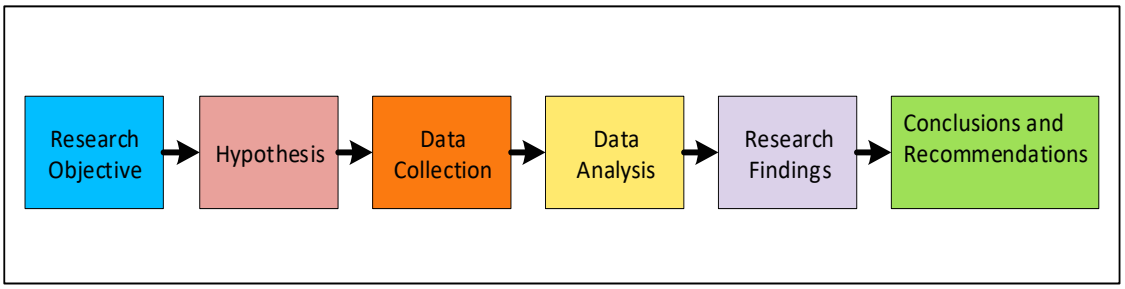

Figure 10. The Research Design Process

3.3 Data Collection Methods

The research data collection is carried out in phases. The first phase involved a quantitative approach, utilizing a structured survey questionnaire distributed to people managers within the IT industry. In the second phase, insights gathered from the initial surveys, focused online and face-to-face interviews with selected managers. These interviews aim to gather additional information from their experiences, including recommendations and real-world case examples.

3.3.1 Quantitative Method – Survey Questionnaire

Primary data is considered original and provides a realistic and accurate perspective, as it is directly focused on the specific research topic. The use of survey questionnaires is a widely adopted method for primary data collection, particularly among private researchers. These questionnaires are designed to be clear and easy to understand, aiming to elicit specific information relevant to the research problem. They typically consist of close-ended questions to ensure structured responses. Key advantages of this method include low cost, elimination of interviewer bias, and the provision of sufficient time for respondents to offer well-considered answers. Additionally, large sample sizes can be accommodated, enhancing the reliability and accuracy of the findings (Kothari, 2004).

A structured survey comprising 15 close-ended questions was designed to gather insights into the performance data collection challenges. The questionnaire was

organized into four thematic sections: (1) background information of the respondents, (2) the current performance management practices employed within their organizations, (3) challenges in the current process, and (4) perspectives on the adoption of AI techniques in performance management. The definition of these questions is guided by a literature review on performance management and AI technologies.

The survey was distributed electronically using Microsoft Forms via a TAMK (Tampere University of Applied Sciences) student account. It was sent to a sample of approximately 35 experienced people managers based in Europe, the United States, and India, all of whom possess extensive experience in team management and employee development. Responses were received from 31 managers. A detailed list of the survey questions is provided in Appendix I.

3.3.2 Qualitative Method – Interviews

Flexibility, transparency, and responsiveness to specific subject are characteristics of qualitative method which makes interviews a valuable tool for exploring complex research questions that cannot be fully addressed through quantitative methods alone. Interviews are particularly effective in eliciting in-depth insights into individuals' subjective experiences, perspectives, and critical reflections on the research topic (Busetto et al., 2020).

Providing participants with prior information about the interview questions enhances their preparedness and leads to more thoughtful and reflective responses. The interactive nature of interviews allows for clarification and follow-up questions, which helps to overcome limitations such as researcher-centric bias often associated with structured surveys. Furthermore, interviews foster a more personal and empathetic research environment, enabling researchers to capture nuanced information, non-verbal cues, and context-specific meanings that contribute to a richer understanding of the subject matter (Kothari, 2004).

To complement the survey findings and gain deeper insights into the experiences of managers, semi-structured interviews are conducted with three people managers. These interviews aimed to explore their practical experiences in managing

employee performance, the specific challenges arising from the nature of their work, and the strategies they employ to conduct performance evaluations effectively.

3.4 Data Analysis Method

“Data analysis plays an important role in transforming raw research data into meaningful set of conclusions and reports. Descriptive statistical methods summarize and organize the important characteristics of the collected research data” (Bhandari, 2020).

The quantitative data is analysed with measures of percentage sample. To derive meaningful insights, the collected data is visualized using pie charts and graphical representations. These visualizations support the analysis of two key areas: (1) the challenges managers face in collecting accurate employee performance data, and (2) the perceived potential of artificial intelligence (AI) technologies in enhancing performance management processes.

Thematic analysis is used for qualitative data analysis, particularly suited for rich textual data. It involves “a systematic process of familiarization with the data, generating initial codes, searching for themes, reviewing and refining them, and ultimately producing a coherent narrative that reflects the underlying meanings in the data” (McLeod, 2024).

All observations and qualitative data gathered through interviews were systematically categorized under a single thematic area: the most reported challenges encountered during employee performance management.

3.5 Ethical Considerations in the Research

According to (*Hyvä Tieteellinen Käytäntö (HTK)*, 2024) guidelines, “the basic principles of reliability, integrity, respect and accountability must be considered during the research process”.

1. **Information to participants:** Prior to the study, participants were informed about the research objectives, intended outcomes, nature of their participation, data usage and researcher's independent role (Mirza et al., 2023).
2. **Voluntary participation:** A prior consent about the voluntary participation was sought from each participant without forceful involvement.
3. **Confidentiality of the data:** All the research data is managed with confidentiality and used exclusively for this study, with any personal or organizational identifiers removed. The data is processed in accordance with university data protection guidelines.

3.6 Limitations of the Research

The constraints of this study are listed as below:

1. The study focussed mainly on Information Technology companies. Hence, the findings from this study may not be generalizable to other industries globally.
2. Survey responses may reflect participant bias and be influenced by limited experience within specific organizational contexts.
3. The research focussed mainly on problems faced by managers, and it did not include aspects related to employee satisfaction.
4. The sample size used in the survey may be insufficient to draw accurate conclusions regarding the research questions.
5. The scope of this research was confined to providing recommendations for adopting AI technologies in employee performance data collection. It did not extend to providing technical guidance or specific tool recommendations for implementation.

4 RESEARCH FINDINGS AND ANALYSIS

This chapter presents the results of quantitative data collection through a survey and qualitative data collected from interviews.

4.1 Quantitative data – Survey Results

The survey questionnaire was circulated via Microsoft Forms to 35 people managers, yielding 31 responses and resulting in a response rate of approximately 89%. The collected data is examined using the visualization tools within Microsoft Forms, which generated pie charts and bar graphs. The responses are categorized into four thematic areas, corresponding to the structure of the original questionnaire (see Appendix I).

4.1.1 Background Information

The survey comprised responses from 31 people managers. A majority (55%) reported having more than ten years of managerial experience, 29% had up to five years, and 16% had six to ten years.

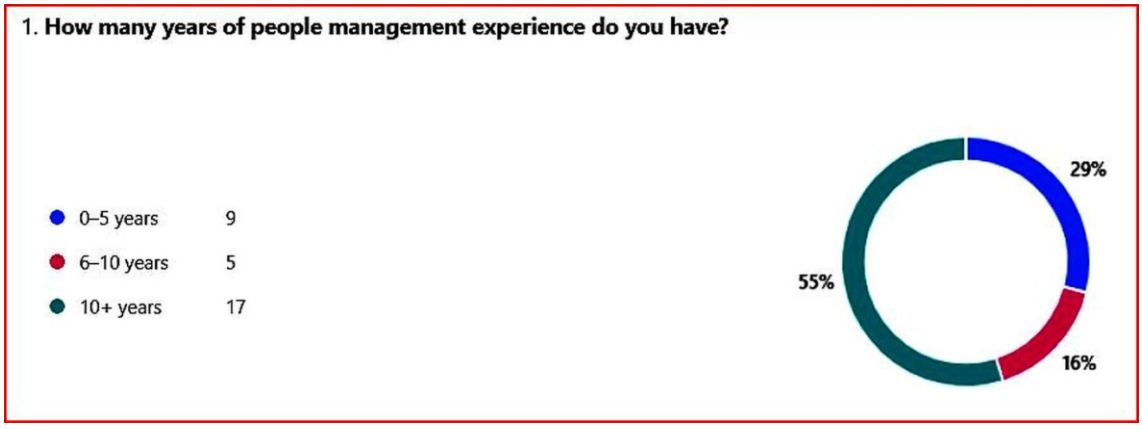

Figure 11. Response for Question 1: Management Experience

Regarding team size, 39% of respondents managed between 1–10 employees, another 39% managed 11–20 employees, and the remaining 23% supervised teams larger than 20. This suggests a balanced representation across small, medium, and large team structures.

Figure 12. Response for Question 2: Number of Reporting Employees

4.1.2 Current Performance Management Process

Frequency of performance data collection and review varied among respondents. Quarterly reviews were the most common (39%), followed by half-yearly (29%), monthly (16%), and annual reviews (16%).

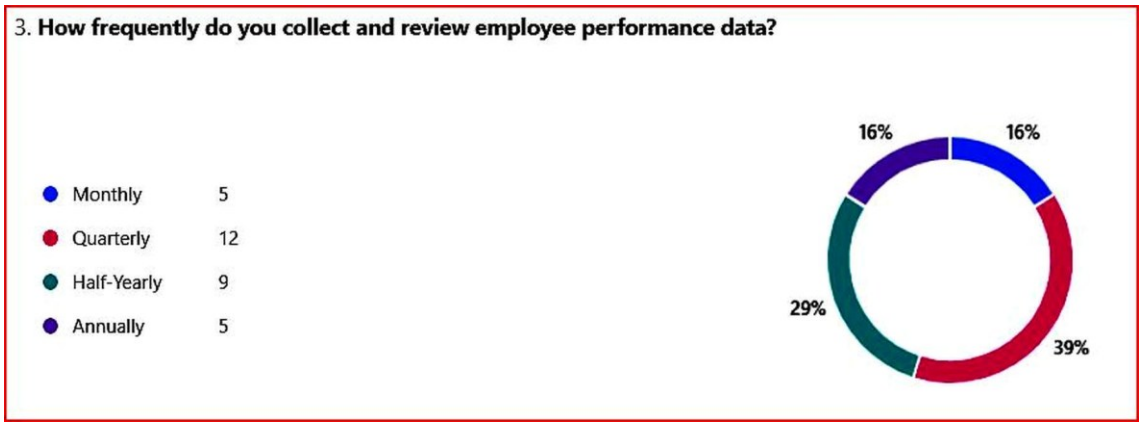

Figure 13. Question 3 Response: Data Collection Frequency

In terms of the type of employee performance data, manager observations and assessments were the most frequently cited source, mentioned by 17 respondents. Task completion and productivity metrics followed closely, with 16 respondents. Peer and stakeholder feedback was utilized by 15 respondents. Behavioural observations, such as team collaboration and attitude, were referenced by 12 respondents. Notably, only one respondent reported using automated system-generated performance metrics.

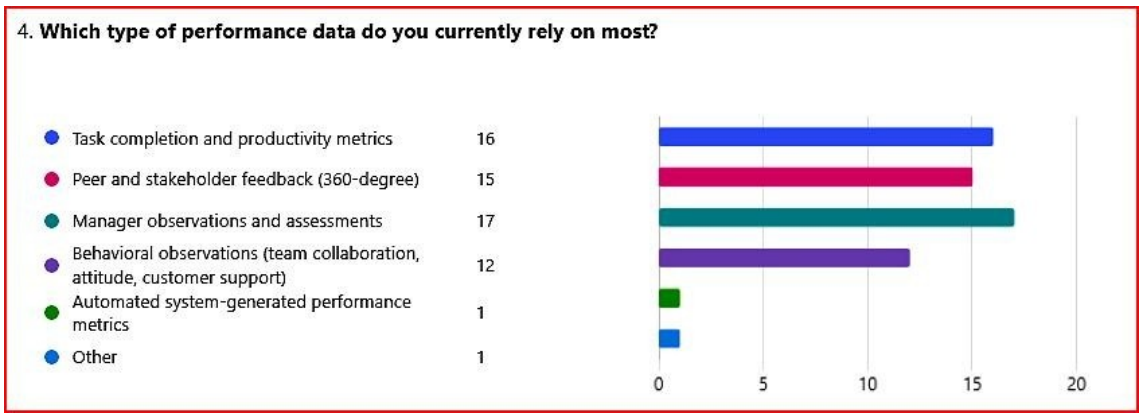

Figure 14. Response for Question 4: Type of Performance Data

The respondents reported using a variety of tools to capture performance data:

- Organization's HR platforms (e.g., SuccessFactors, Workday) and manager observations were each cited by 18 respondents.
- Jira/Trello/Agile boards were used by 13 respondents.
- 360-degree feedback systems (online surveys) were used by 8 respondents.
- Timesheets and spreadsheets/manual trackers were used by 6 respondents.

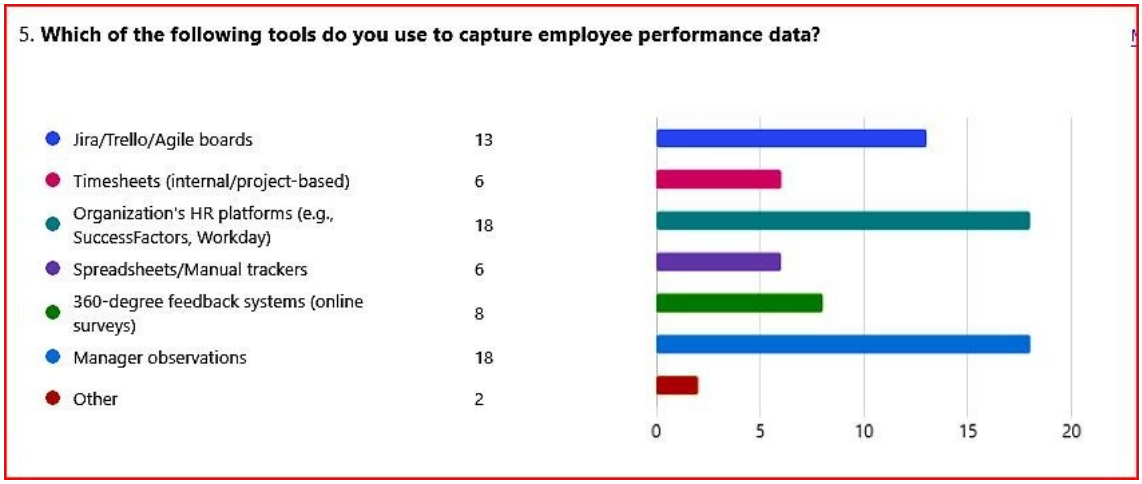

Figure 15. Response for Question 5: Performance Management Tools

4.1.3 Challenges in the Current Performance Management Process

The most challenging steps identified in the performance management process was **accurate data collection** (20 responses), followed by performance assess-

ment and rating decisions (12), and employee goal setting, monitoring, and competence development planning (7 each). Delivering performance reviews was considered least challenging (3 responses).

Figure 16. Response for Question 6: Most Challenging Steps in PM

The survey responses revealed several significant challenges faced by managers in collecting employee performance data. The most frequently cited challenge was the difficulty in tracking qualitative contributions. The challenges in data collection were multifaceted:

- Difficulty in tracking qualitative contributions (14),
- Lack of standardized data collection processes (13),
- Fragmented data across systems (11),
- Biases in peer review feedback (8),
- Lack of automation (7),
- Time constraints (5).

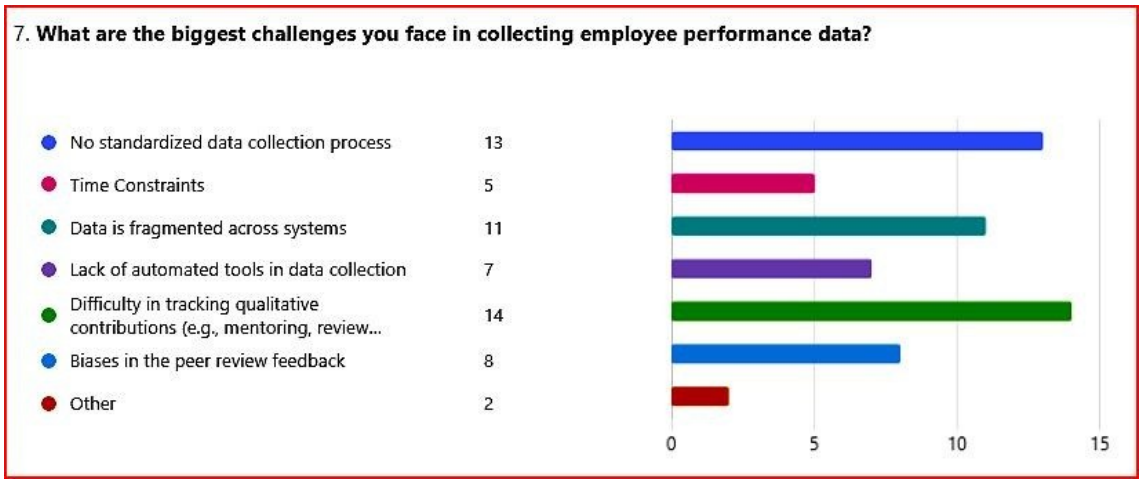

Figure 17. Response for Question 7: Challenges in Performance Data Collection

Regarding the availability of sufficient and accurate data to assess employee performance, a total of 32% of respondents reported that they always have sufficient and accurate data to assess employee performance, while the remaining 68% indicated that they only sometimes have access to such data. Notably, no respondents reported rarely or never having adequate data.

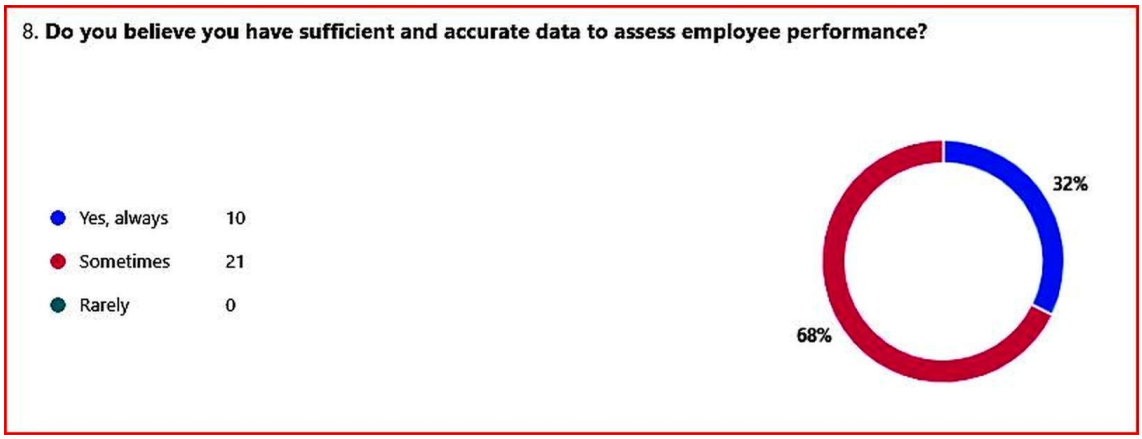

Figure 18. Response for Question 8: Accuracy and Completeness of Data

Regarding the effectiveness of current data collection processes:

- 84% rated their process as “somewhat effective,” acknowledging usefulness but noting gaps and biases,
- 10% found it “very effective,” and
- 6% considered it “not very effective.”

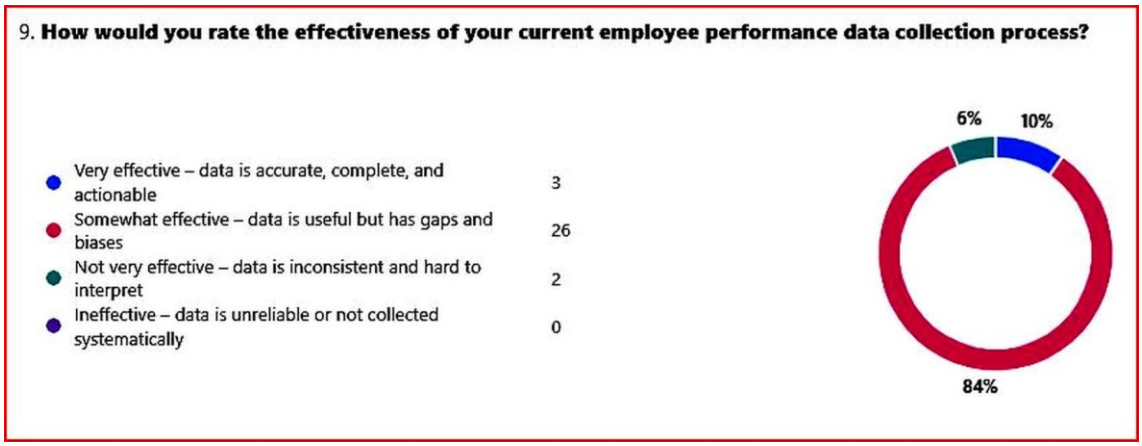

Figure 19. Response for Question 9: Effectiveness of Data Collection Process

The most frequently cited barrier to regular feedback was the lack of real-time performance data (15 responses), followed by lack of automation (10), lack of time and standardized feedback processes (8 each), and lack of tools and training (4 and 2 respectively). Notably, 4 respondents reported no barriers.

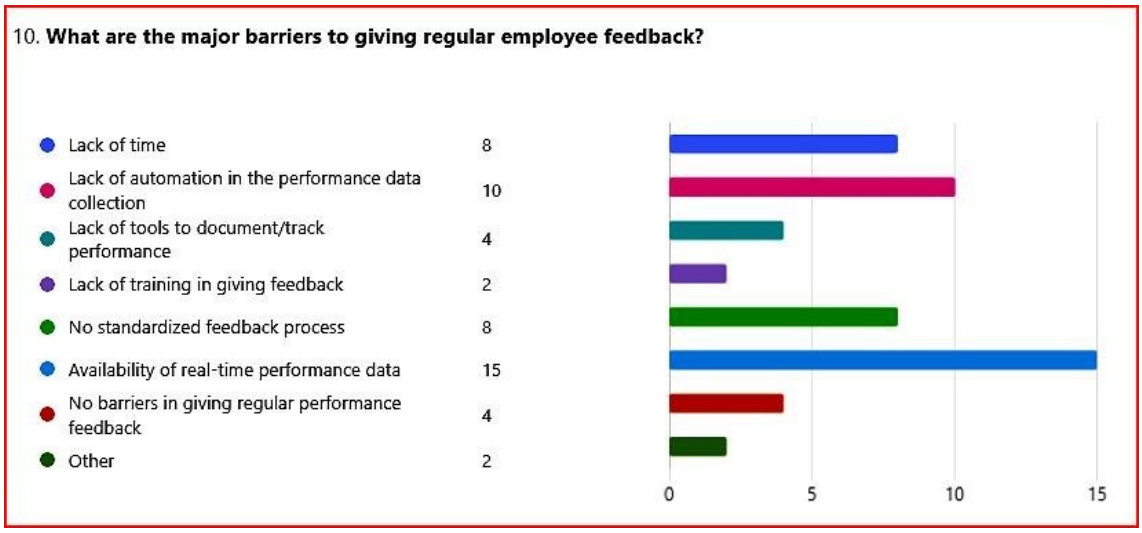

Figure 20. Response for Question 10: Barriers in Regular Performance Feedback

4.1.4 Perspectives on the Adoption of AI Techniques

AI adoption among people managers remains limited. Most respondents (58%) reported that they do not currently use AI tools for performance evaluation. However, 26% indicated that they are planning to adopt such tools in the future, while 10% have developed their own AI mechanisms, and 6% use AI integrated within their HR systems.

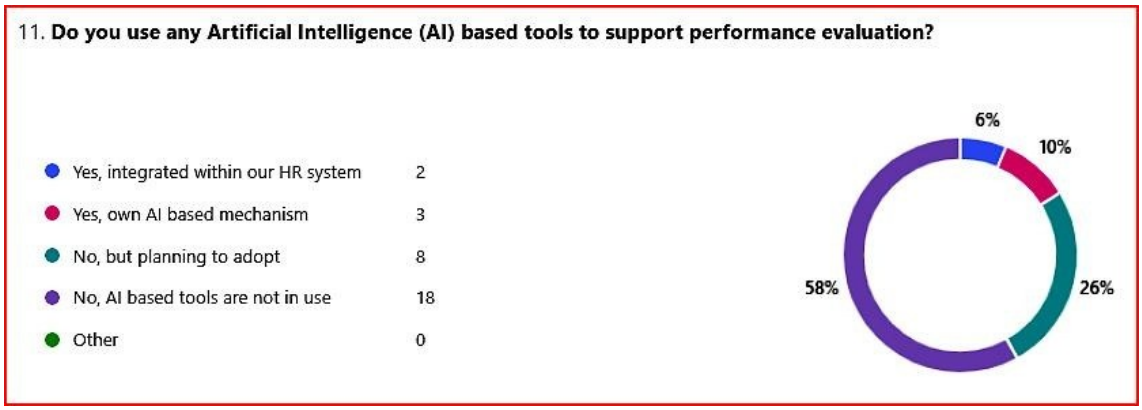

Figure 21. Response for Question 11: Usage of AI tools in PM

Despite the low current adoption, there is strong interest in AI-driven enhancements. The most frequently identified helpful AI task was automated data collection. The most helpful AI tasks identified were:

- Automated data collection (18 responses),
- Predictive analytics for identifying top talent or retention risks (13),
- Analysis of feedback and rating decisions (7),
- Goal alignment and tracking (7),
- Creating improvement plans (5),
- Performance review delivery (2),
- All the above (6).

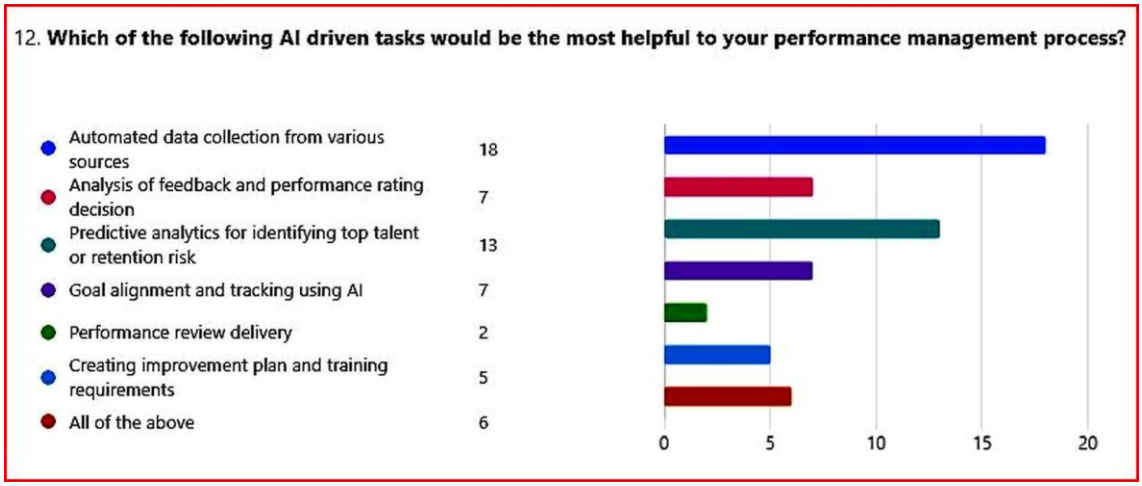

Figure 22. Response for Question 12: AI Driven Tasks in PM Process

Respondents expressed several concerns about the use of AI in performance management. The most frequently cited issue was bias in algorithms, mentioned by 20 respondents, followed closely by concerns about the accuracy of AI-generated insights, reported by 19 respondents.

- Bias in algorithms (20),
- Accuracy of insights (19),
- Data privacy and security (12),
- Lack of transparency in decision-making and resistance from employees/managers (8 each),
- Only one respondent reported no concerns.

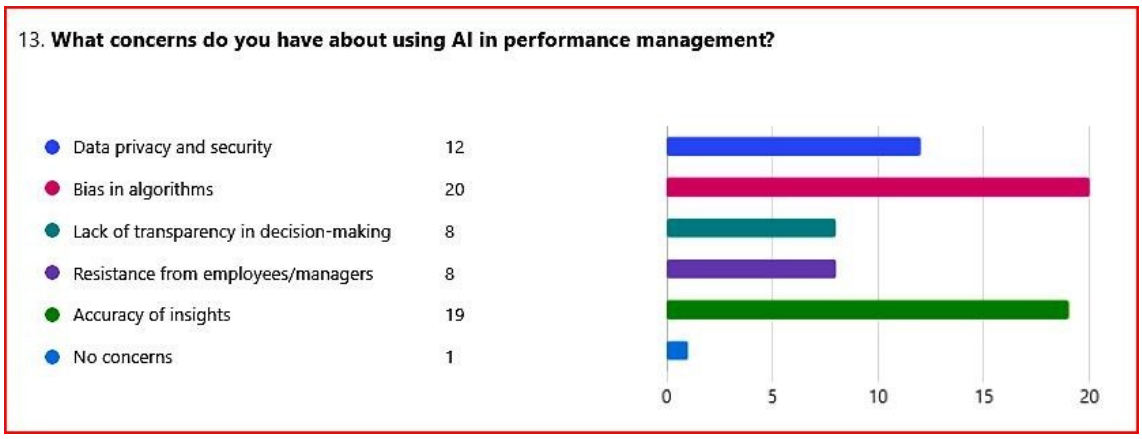

Figure 23. Response for Question 13: Concerns with AI Usage

Respondents were asked to evaluate whether they believe Artificial Intelligence can improve fairness and efficiency in performance evaluations. A total of 45% expressed agreement with this statement, while 39% remained neutral. Additionally, 10% strongly agreed, and 6% disagreed. Notably, none of the respondents strongly disagreed.

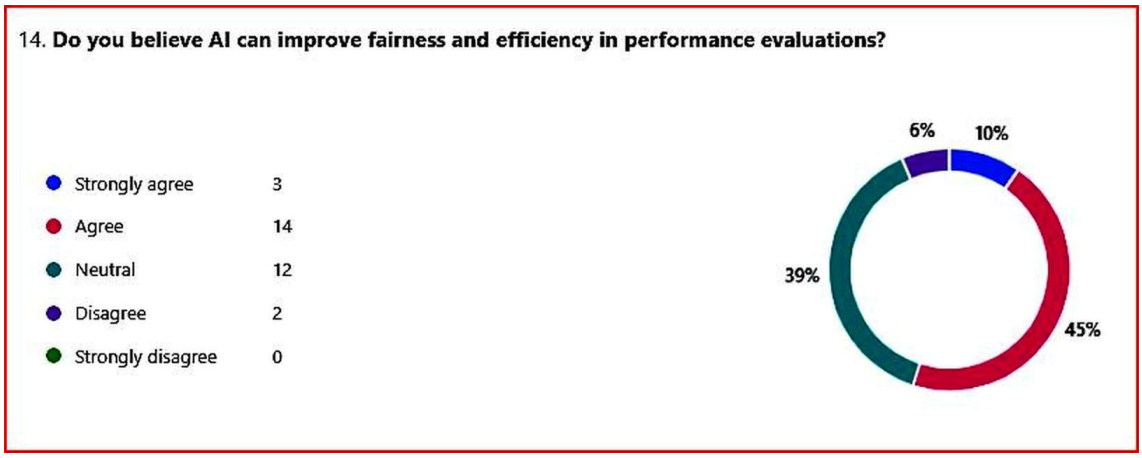

Figure 24. Response for Question 14: Fairness and Efficiency with AI

Regarding the assessment of the importance of investing in AI tools for performance management within the next one to two years, a total of 39% considered such investment to be “somewhat important,” while 35% rated it as “very important.” Additionally, 16% of respondents were unsure about the importance, and 10% viewed it as “not important.” These results indicate that a significant majority (74%) recognize the relevance of AI investment in the near term.

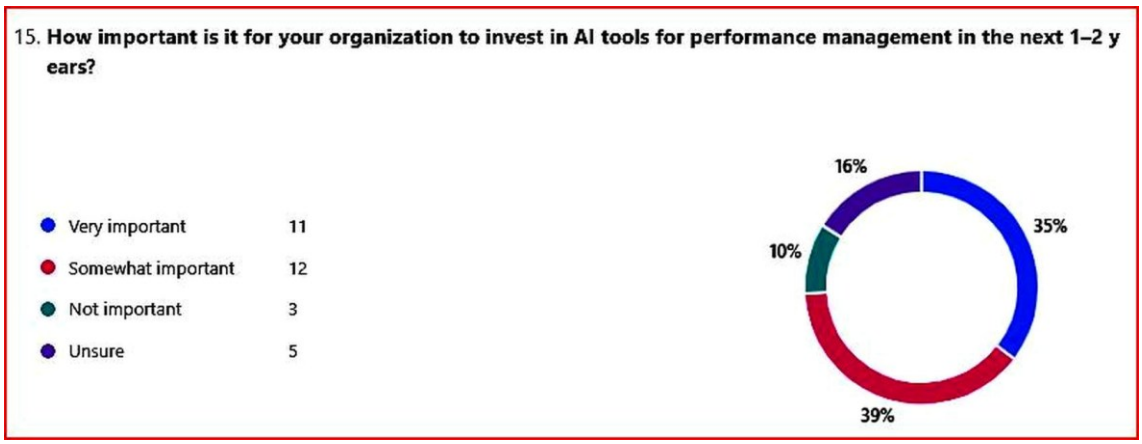

Figure 25. Response for Question 15: Importance of AI Tool Investment

4.2 Qualitative Data Results – Interviews

Qualitative data for this study were collected through in-depth interviews with three people managers. The insights gathered from these interviews highlight several practical challenges encountered in the performance management process:

1. One notable challenge identified by managers pertains to the setting of performance goals and assessments in research-oriented roles, where outcomes are often ambiguous or not clearly defined. In such contexts, the application of the SMART framework becomes particularly difficult, resulting in less structured and potentially subjective goal-setting processes.

2. Frequent changes in project scope and product roadmaps were also highlighted as significant obstacles, affecting employee goals and the criteria used for performance measurement, often requires continuous adjustments and making it challenging to maintain alignment between individual objectives and organizational priorities.

3. In service-oriented organizations, the definition of success is frequently determined by external clients. Incorporating client-specific objectives into the internal performance management system presents a unique challenge.

4. Managing large teams that are distributed across multiple projects complicates the performance management process. Managers reported difficulties in consistently tracking individual contributions and progress, which can lead to oversight and inconsistencies in performance evaluations.

5. A lack of well-calibrated rating criteria was also observed. Managers noted that performance ratings often vary significantly between managers, with some distributing ratings to fit budget constraints or based on employees' current salary quartiles, rather than on standardized performance metrics.

6. The first-level managers often face constraints imposed by upper management and HR policies, which can limit their ability to recognize and reward high-performing employees. As a result, even when there is a larger pool of strong performers, rating distributions and promotion recommendations may not accurately reflect actual performance, making it challenging for managers to justify outcomes during review discussions with employees.

4.3 Results Analysis

1. The primary method of performance evaluation remains managerial observation, supported by task completion metrics and peer feedback. Automated system-generated metrics are scarcely utilized. This reliance on subjective and semi-structured manual inputs introduces potential inconsistencies and increases the risk of bias.

2. Current practices indicate a strong dependence on HR information systems and manual observations, with supplementary use of project management tools and feedback platforms. The limited integration of engineering or work-management systems suggests a fragmented technological ecosystem, constraining holistic performance view.

3. Accurate performance data collection emerges as the most resource-intensive and problematic stage within the performance management cycle. Contributing factors include the absence of standardized processes and

the fragmented data across multiple, disconnected systems. These barriers compromise reliability and accuracy of performance insights.

4. The timely and actionable feedback is hindered by several limitations, notably the lack of real-time performance data and insufficient automation in data collection. Additional impediments include time constraints, absence of standardized feedback process, and inadequate tooling and training for managers.

5. Existing data collection systems are broadly characterized as moderately effective, offering utility for evaluations but contains gaps and biases.

6. The results highlight that current performance management systems are partially effective. Insufficient data for the evaluations suggest an urgent need for structural and technological enhancements.

7. The use of artificial intelligence in performance management remains in its nascent stage, with only a small number of organizations currently implementing AI-based solutions. However, there is a clear strategic intent to invest in these technologies in the near future.

8. Automated data collection is viewed as the most valuable application of AI, as it addresses critical weaknesses in current processes. Despite this, concerns about algorithmic bias and the reliability of AI-generated insights remain significant obstacles to adoption.

9. Managers express cautious optimism about AI’s assistance to increase fairness and streamline performance evaluations. While many expect positive outcomes, a considerable proportion remain neutral. It suggests that organizations must provide clear evidence of AI’s fairness, accuracy, and transparency to build trust.

5 DISCUSSION AND CONCLUSIONS

This chapter presents the comprehensive discussion and conclusion derived from analysis of the research findings. It also offers recommendations for the organizations and suggestions for future research in employee performance management.

Given that the research was conducted with people managers from Information Technology (IT) companies, the scope of the discussion and conclusion is mainly confined to this sector. Nevertheless, the core principles of employee performance management are broadly applicable, and findings may be extended to other industrial sectors with appropriate contextual adaptations.

5.1 Discussion

This study investigated the primary challenges encountered by managers in collecting employee performance data. To structure the inquiry, one primary question and three secondary questions were developed:

- **Main Research Question**: What are the main challenges faced by managers in the employee performance data collection?
- **Sub-questions**:
    1. What methods and metrics are currently used by managers to collect employee performance data?
    2. What are the common challenges managers face to ensure the accuracy of employee performance data?
    3. What type of performance metrics can AI-based techniques effectively collect, analyse, and present to managers for decision-making?

Through an extensive literature review on employee performance management, four hypotheses were formed:

1. Traditional methods and metrics for evaluating employee performance often lack the capacity to provide a comprehensive and unbiased assessment.

2. Managers face common challenges in ensuring the accuracy of performance data, including cognitive biases, time constraints, and lack of a standardized evaluation system.
3. Integrating AI techniques into employee performance management has the potential to improve both the accuracy and efficiency of performance data collection.
4. AI-based techniques can effectively collect, analyse, and present performance metrics, thereby supporting more informed managerial decision-making.

Findings from both quantitative (survey) and qualitative (interview) data collection methods support these hypotheses. The central theme emerging from this data is that accurate performance data collection is perceived as the most challenging and effort-intensive aspect of the performance management process.

Morris (2020) emphasized that the availability of accurate performance data, inconsistent metrics, and managerial time constraints are key challenges in implementing effective performance management systems (Morris, 2020).

Borman and Dunnette(1975) recommended inclusion of behavioural aspects in performance measurement to mitigate biases in ratings by introducing subjectivity (Borman & Dunnette, 1975).

One key issue identified is the absence of a standardized data collection framework across organizations. This lack of standardization results in inconsistencies in performance ratings, as individual managers employ varied methods for data collection. Consequently, the process becomes time-consuming and heavily reliant on the manager’s personal judgment and experience. Inadequate training and limited experience among managers further exacerbate concerns regarding the fairness and accuracy of performance evaluations, often leading to employee dissatisfaction.

Another significant challenge highlighted is the difficulty in capturing qualitative contributions such as team collaboration, active participation in meetings, and

peer support. These aspects are inherently difficult to quantify unless the manager is deeply involved in the project and understands its nuances. Additionally, performance-related data is often fragmented across multiple platforms such as emails, project deliverables, tracking tools, and collaboration channels, making it difficult to extract meaningful insights for evaluation. These findings strongly support Hypothesis 2.

Regarding the availability of accurate and sufficient data for performance evaluations, over 70% of respondents reported a lack of adequate data. This suggests a clear gap in the process of employee data collection, mainly due to the absence of standardized methods and limited automation. Managers either invest significant time and effort in manual data collection or proceed with incomplete data, both of which compromise the accuracy and fairness of the performance management system.

Admin (2025) noted that traditional performance management systems rely on manual processes and lack access to real-time performance data, leading to inefficiencies (Admin, 2025).

Nearly 90% of respondents indicated that their current performance management systems are ineffective. The lack of real-time data and automation were identified as major barriers to providing timely and constructive feedback to employees, thereby confirming Hypothesis 1.

The study also found that approximately 85% of respondents do not utilize AI-based tools in their performance management processes, relying instead on manual methods. This reliance contributes to the challenges in data collection and feedback delivery, further validating Hypotheses 1 and 2.

In relation to Hypotheses 3 and 4, majority of respondents expressed confidence in AI’s potential to enhance fairness and accuracy in performance management. Respondents indicated a strong preference for AI tools that can automate data collection from diverse sources and streamline other aspects of the performance management process. This aligns with the challenges previously identified and suggests that AI adoption could be a viable solution.

Ethicality is a cornerstone of a trustworthy system and performance evaluations must adhere to established ethical standards. Furthermore, the confidentiality of performance data and ratings must be protected to ensure integrity and respect for individual privacy (Aguinis, 2013).

Ethical concerns surrounding AI adoption were also noted in the research data. These include potential algorithmic biases, the accuracy of AI-generated insights, lack of transparency in decision-making, and problems associated with data privacy and security. Addressing these concerns is essential for successful AI integration.

5.2 Recommendations for Enhancing Efficiency and Accuracy in Performance Management

This section presents recommendations that have been derived based on the findings of this research.

5.2.1 Standardization in Performance Data Collection

Aguinis (2013) outlined the attributes of an ideal performance management system, emphasizing that standardized frameworks facilitate more accurate performance evaluations (Aguinis, 2013).

A critical implication of the study is the necessity for **standardization** in employee performance data collection within organizations. To address this, it is imperative that Human Resources (HR) departments collaborate closely with line managers to define **key performance metrics** tailored to each job function. This collaborative effort should result in the development of standardized performance criteria, clearly defined data measurement points, and structured assessment protocols. For instance, roles in software development may include metrics such as code quality, delivery timelines, and peer reviews. Each criterion should be accompanied by measurable indicators and data sources such as project management tools, customer feedback systems, and collaboration platforms.

Standardization not only enhances the reliability of performance evaluations but also facilitates the integration of AI-based tools. Establishing such a framework would significantly reduce managerial subjectivity, improve fairness, and enable more accurate benchmarking across teams and departments.

5.2.2 Use of AI Based Automation in Performance Management

Sampath et al (2024) proposed the integration of AI into employee performance management systems to enable data-driven analysis and enhance the evaluation process through real-time feedback (K. Sampath et al., 2024).

To collect the comprehensive and real-time performance data, the implementation of automation is strongly recommended. Generative AI technologies can be leveraged to align individual goals with organizational objectives, apply predictive analytics to identify high-potential employees or retention risks, and support the generation of performance reports and competency development plans.

Managing and documenting cases of underperformance requires substantial effort and robust data to ensure fair and evidence-based evaluations. Automated data collection from various sources can significantly support this process.

Modern enterprise applications and engineering tools possess built-in analytics capabilities. For example, version control systems can provide data on code contributions, while project management tools such as Jira can track task completion timelines and productivity metrics. These data points, when integrated through automation, can provide a holistic and accurate insights of employee performance.

Overall, the adoption of AI based automation in performance management can lead to more efficient processes, reduce manual effort, and improve the accuracy and fairness of evaluations.

5.2.3 Suggestions for Qualitative Performance Data Collection

Rohitha (2025) defined key behavioural metrics for inclusion in performance evaluations to enhance data accuracy and fairness (Rohitha, 2025).

Capturing qualitative aspects of employee performance such as behaviour, proactiveness, collaboration, and mentoring remains a complex yet essential component of performance management. One effective approach for gathering such data is the inclusion of close-ended questions within 360-degree feedback, enabling standardized assessment of behavioural attributes.

In addition, data analytics from team collaboration tools can be utilized to evaluate employee contributions, including responsiveness to support queries and engagement in peer reviews. These platforms offer valuable insights into day-to-day interactions that are often overlooked in traditional performance assessments.

To further enhance the reliability of qualitative evaluations, sentiment analysis can be applied to the collected feedback, providing a data-driven understanding of employee behaviour and interpersonal dynamics. It is also recommended that managers systematically record observations of positive and negative behaviours, as well as any notable incidents, in real time. This practice supports more objective and evidence-based evaluations, helping to mitigate bias and improve the overall fairness of the performance management process.

5.2.4 Addressing AI related Ethical Issues

Ethical challenges associated with artificial intelligence (AI) remain a significant concern, particularly due to the opacity in decision-making processes, biases in training data that affect the accuracy of results, and data privacy issues that undermine trust and respect (Chapter et al., 2009; Douglas et al., 2025).

It is recommended that HR departments develop comprehensive guidelines and provide targeted training to managers to ensure the effective and ethical implementation of AI technologies in performance management. Addressing ethical

concerns such as training biases, accuracy of output, and privacy should be a priority within organizations. Data privacy and security can be safeguarded by establishing clear protocols for the protection and handling of sensitive performance data, which is considered personal and confidential. HR tools should be equipped with robust features to support these requirements.

To build trust in AI-generated insights, pilot implementations in controlled environments are advisable. During initial adoption, managers should validate AI-collected data prior to its use in performance evaluations. As organizations gain experience and AI tools are further refined, the accuracy and reliability of AI-driven performance management systems are expected to improve.

5.2.5 Managers and Employees Awareness and Engagement

Morris (2020) emphasized that a common challenge is the lack of training for managers on core principles of performance management (Morris, 2020).

Everyone in the organization is a key stakeholder in the performance management process. It is recommended that HR departments facilitate structured training programs and develop clear guidelines to enhance comprehension of the strategic importance of performance management. These initiatives should emphasize how performance outcomes impact both individual career development and broader organizational success. Training should also include best practices for providing peer feedback, with a focus on minimizing bias and promoting constructive input.

Furthermore, increasing awareness of AI-based systems and their potential benefits is essential to reduce resistance and scepticism among stakeholders. Educating managers and employees on the capabilities of AI such as automation, data-driven insights, and enhanced fairness can foster greater acceptance and smoother integration of these technologies into existing performance management frameworks.

5.3 Conclusion

This research has examined the challenges associated with employee performance management within the context of Information Technology companies. The aim was to identify the key challenges associated with collecting employee performance-related data and examine how AI can address these issues. The study focused on understanding the limitations of current performance management practices and evaluating how AI-driven solutions could enhance data accuracy, reduce bias, and improve overall efficiency.

To address the research questions, an extensive review of existing literature was conducted. This included an examination of distinct stages within the performance management process, the attributes of a model system, and merits of implementing successful performance management practices. The review also highlighted prevalent issues such as cognitive biases, inconsistencies in evaluation, and the lack of standardized procedures. Furthermore, theoretical frameworks related to Artificial Intelligence and generative AI were explored, along with recent studies that integrate AI into performance management systems. These insights formed a basis for formulating the study's hypotheses.

The research data was collected from 31 people managers, and the findings support the proposed hypotheses. The results indicate that the most challenging and effort-intensive parts of performance management are the accurate collection of performance data and the assessment and decisions of rating of employee performance.

The study also confirms that current systems suffer from inaccuracies. Additionally, the lack of real-time performance data and lack of automation were identified as major barriers. Importantly, the research reveals that managers are generally open to adopting AI-based systems for performance evaluations.

In conclusion, incorporating AI into performance management systems offers substantial potential for organizations seeking to improve employee engagement, satisfaction, and alignment with business objectives. Automated, real-time data

collection can not only enhance the quality of performance insights but also free up managerial time for strategic decision-making. By addressing existing challenges and leveraging AI capabilities, organizations can move toward more data-driven and effective performance management practices.

5.4 Scope for Future Research

Subsequent research in employee performance management should extend its scope beyond the Information Technology sector to encompass a broader range of industries. Each sector presents distinct challenges in collecting accurate and reliable performance data, collected from its operational context, workforce dynamics, work culture and management structure. By incorporating these sector-specific nuances, future research can offer a comprehensive and generalizable understanding of PM challenges.

To deepen the understanding of employee performance management, future studies should incorporate in-depth qualitative interviews with people managers across various organizational levels. These interviews can uncover nuanced insights into managerial attitudes, behaviours, and experiences throughout the performance management lifecycle.

The survey results show that 45% of managers lack confidence in the capabilities of AI systems to bring impartiality and accuracy in performance evaluations. This scepticism highlights a critical area for further investigation. Future studies should examine the reasons for this lack of confidence, including concerns about biases and lack of transparency in decision making. Addressing these issues is essential for designing AI based performance management systems.

Another valuable direction for future research is the development and testing of AI-based performance management prototypes in controlled environments. Feedback from managers using these systems would provide empirical evidence on their usability, accuracy, and impact on decision-making. This approach would strengthen the connection between theoretical research and practical application.

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APPENDICES

Appendix 1. **List of Survey Questionnaire**

Background Information:

1. How many years of people management experience do you have?
   - 0-5 years
   - 6-10 years
   - 10+ years

2. How many employees currently report to you?
   - 1-10
   - 11-20
   - More than 20

Performance Management Process:

3. How frequently do you collect and review employee performance data?
   - Monthly
   - Quarterly
   - Half-Yearly
   - Annually

4. What type of performance data do you currently rely on most?
   - Task completion and productivity metrics
   - Peer and stakeholder feedback (360-degree)
   - Manager observations and assessments
   - Behavioural observations (team collaboration, attitude, customer support)
   - Automated System-generated performance metrics
   - Other

5. Which of the following tools do you use to capture employee performance data? *(Select all that apply)*
   - Jira/Trello/Agile boards
   - Timesheets (internal/project-based)

- Organization's HR platforms (e.g., SuccessFactors, Workday)
- Spreadsheets/Manual trackers
- 360-degree feedback systems (online surveys)
- Manager observations
- Others (please specify)

Current Challenges in Performance Management Process:

6. Which steps of the performance management process do you find the most challenging and effort intensive for managers?
   - Employee Goal setting
   - Performance Monitoring
   - Accurate Performance data collection
   - Performance assessment and employee rating decision
   - Delivering Performance reviews to employees
   - Creating Competence development plan
   - Other

7. What are the biggest challenges you face in collecting employee performance data? *(Select up to 2)*
   - No standardized data collection process
   - Time Constraints
   - Data is fragmented across systems
   - Lack of automated tools in data collection
   - Difficulty in tracking qualitative contributions (e.g., mentoring, review contribution, collaboration efforts)
   - Biases in the peer review feedback
   - Other

8. Do you believe you have sufficient and accurate data to assess employee performance?
   - Yes, always
   - Sometimes
   - Rarely

9. How would you rate the effectiveness of your current employee performance data collection process?
    - Very effective – data is accurate, complete, and actionable
    - Somewhat effective – data is useful but has gaps and biases
    - Not very effective – data is inconsistent and hard to interpret
    - Ineffective – data is unreliable or not collected systematically

10. What are the major barriers to giving regular feedback? *(Select all that apply)*
    - Lack of time
    - Lack of automation in the performance data collection
    - Lack of tools to document/track performance
    - Lack of training in giving feedback
    - No standardized feedback process
    - Availability of real-time performance data
    - No barriers in giving regular performance feedback
    - Other

AI Adoption in Performance management:

11. Do you use any Artificial Intelligence (AI) based tools to support performance evaluation?
    - Yes, integrated within our HR system
    - Yes, own AI based mechanism
    - No, but planning to adopt
    - No, AI based tools are not in use

12. Which of the following AI driven tasks would be the most helpful to your performance management process? *(Select all that apply)*
    - Automated data collection from various sources
    - Analysis of feedback and performance rating decision
    - Predictive analytics for identifying top talent or retention risk
    - Goal alignment and tracking using AI
    - Performance review delivery
    - Creating improvement plan and training requirements

- All the above

13. What concerns do you have about using AI in performance management? *(Select all that apply)*
    - Data privacy and security
    - Bias in algorithms
    - Lack of transparency in decision-making
    - Resistance from employees/managers
    - Accuracy of insights
    - No Concerns

14. Do you believe AI can improve fairness and efficiency in performance evaluations?
    - Strongly agree
    - Agree
    - Neutral
    - Disagree
    - Strongly disagree

15. How important is it for your organization to invest in AI tools for performance management in the next 1–2 years?
    - Very important
    - Somewhat important
    - Not important
    - Unsure

Appendix 2. **Table of Figures**