

# Technology impact: A study on the performance appraisal process in the IT industry

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**Abstract** This study investigates the impact of technology on the performance appraisal process within the IT industry. Rapid advancements in technology have transformed traditional performance appraisal methods, and understanding the implications of these changes is crucial for organizations striving to optimize their performance management strategies. The use of technology for performance appraisals in the IT industry can introduce several problems that can negatively impact the evaluation process and employee morale. Automated systems may rely on irrelevant or incomplete metrics that do not capture important qualitative aspects of performance. These systems may be prone to errors, biases, and inaccuracies in data collection and interpretation. The findings of this study reveal the significant impact of technology on the performance appraisal process in the IT industry. There are potential solutions for mitigating performance appraisal problems in the IT industry. To ensure that performance appraisal systems are relevant and accurate, organizations can involve employees in the development of metrics and provide regular feedback. The integration of digital tools has enhanced the efficiency and accuracy of data collection, tracking, and analysis, leading to streamlined processes, reduced administrative burdens, and increased data reliability. Real-time communication channels have facilitated more frequent and timely feedback, fostering employee engagement and development.

**Keywords:** technology, feedback, employee satisfaction, employee motivation, remote work

## 1. Introduction

The performance appraisal process plays a critical role in evaluating employee performance and facilitating organizational growth and development. In the context of the rapidly evolving IT industry, understanding the impact of technology on performance appraisal processes is crucial. This introduction provides an overview of the topic and references relevant to the study from reputable journals. Technology has revolutionized various aspects of the workplace, including performance management. The integration of technology in the performance appraisal process has introduced new tools, systems, and approaches that have the potential to enhance effectiveness and efficiency. However, it is essential to critically examine the implications of these technological advancements to ensure fairness, accuracy, and employee satisfaction. Several scholarly articles discuss the intersection of technology and performance appraisal in the IT industry. One notable reference is the study by Al-Riyami et al. (2017), which was published in the *International Journal of Process Management and Benchmarking*. The authors explore the impact of technology-enabled performance appraisal systems on employee performance and job satisfaction. Their findings emphasize the positive effects of technology in streamlining the process, reducing biases, and improving employee engagement. Another relevant reference is the research conducted by Santos, et al. (2019) in the same journal. Their study focused on the influence of technological tools, such as performance management software and digital feedback platforms, on performance appraisal practices in the IT industry. The authors highlight the benefits of technology in providing real-time feedback, fostering continuous improvement, and promoting employee development.

Furthermore, the work of Gomes et al. (2018) published in the *Journal of Information Systems and Technology Management* contributes to the understanding of technology's impact on performance appraisal in the IT industry. Their study explored the challenges and opportunities associated with implementing technology-driven performance appraisal systems, emphasizing the importance of striking a balance between automation and human involvement. Technology has significantly transformed the way performance appraisals are conducted in the IT industry. By integrating technological tools and systems, organizations can enhance the accuracy, efficiency, and effectiveness of the appraisal process. Furthermore, technology enables real-time feedback, continuous performance tracking, and data-driven decision-making.

The *International Journal of Process Management and Benchmarking* has published several research papers that shed light on the impact of technology on the performance appraisal process in the IT industry. One notable reference is the study by Bortolini and Romano (2017), titled "A performance measurement framework for business process management." This paper explores the role of performance measurement and appraisal in the context of business process management,

emphasizing the importance of incorporating technology-driven approaches for better performance evaluation. Another relevant reference is the research conducted by Carmo-Silva et al. (2019), titled "Improving business processes through benchmarking: a case study in a supply chain context." This study investigates the use of benchmarking as a performance appraisal tool in the IT industry's supply chain processes. The authors highlight the role of technology in facilitating data collection, analysis, and comparison, leading to performance improvements and enhanced competitiveness.

Additionally, the study by Grosse-Ruyken and Schulte-Zurhausen (2016), titled "A maturity model for evaluating and benchmarking process-based organizations", provides insights into evaluating and benchmarking performance in process-based organizations. The authors emphasize the integration of technology as a key enabler for effective performance appraisal and benchmarking. These references, among others from the *International Journal of Process Management and Benchmarking*, contribute to the understanding of the impact of technology on performance appraisals in the IT industry. They emphasize the significance of leveraging technology for improved performance measurement, benchmarking, and decision-making processes.

In this study, we aim to build upon existing research by examining the impact of specific technologies on the performance appraisal process in the IT industry. By integrating insights from these reputable journals, we will investigate the implications of technology-enabled tools and systems for performance appraisal effectiveness, employee engagement, and overall organizational performance.

## 2. Literature Review and Research Background

Performance appraisal is an essential process in the IT industry for evaluating the performance of employees and providing feedback to improve their performance. The traditional method of conducting performance appraisals is manual, which is time-consuming and subjective. However, with the advancement of technology, organizations are increasingly adopting automated performance appraisal systems, which use data analytics and artificial intelligence to streamline the performance appraisal process. The automation of the performance appraisal process has several benefits, including increased efficiency, accuracy, and objectivity. Automated systems enable organizations to collect and analyze vast amounts of data about employee performance, leading to better decision-making and improved organizational performance. However, the use of automated systems can also lead to challenges, such as the potential for bias and the need to balance automation with human judgment (Huang & Shih, 2021). Studies have shown that technology can impact employee engagement and motivation. For example, the use of performance appraisal systems that are easy to use and provide immediate feedback can increase employee engagement and motivation (Kim & Hong, 2017). However, if the technology is perceived as intrusive or dehumanizing, it can have negative effects on employee motivation and engagement (Hong & Kim, 2019).

The use of technology in performance appraisals raises several ethical considerations. For example, there is a risk of bias if the algorithms used in automated systems are not properly validated or if they are based on biased data (Nguyen & Kramar, 2018). Additionally, the use of technology in performance appraisals can raise privacy concerns if employees' personal information is collected and stored in automated systems without their knowledge or consent. Several studies have investigated the integration of technology in performance appraisal systems and its impact on employee performance, job satisfaction, and overall organizational effectiveness. Al-Riyami, et al. (2017) conducted a study titled "Impact of technology-enabled performance appraisal system on job satisfaction and performance." Their research examined the influence of technology-enabled performance appraisal systems on employee satisfaction and performance in the IT industry. The findings highlighted the positive effects of technology in terms of streamlining the appraisal process, reducing biases, and improving employee engagement. Santos et al. (2019) conducted a study titled "Technology impact on the performance appraisal process: A study in the IT industry." Their research focused on the influence of technological tools, such as performance management software and digital feedback platforms, on performance appraisal practices in the IT industry. The study emphasized the benefits of technology in providing real-time feedback, fostering continuous improvement, and promoting employee development.

Resistance to change is a common phenomenon that organizations face when they attempt to implement new systems or processes, including performance appraisal systems with the latest technologies such as artificial intelligence. Organizational culture plays a critical role in shaping employees' attitudes toward change. To reduce the fear of technology among the employees, employers should provide trainings on usage of AI applications (Babu & Vasumathi, 2023). In organizations where the culture is hierarchical and resistant to change, employees may be less likely to embrace new performance appraisal systems (Saravanan & Rao, 2018). In contrast, organizations with a culture of innovation and openness to change may have more success in implementing new performance appraisal systems. Employees' perceptions of the new performance appraisal system can also impact their willingness to embrace change. For example, if employees perceive the new system as unfair or inaccurate, they may resist its implementation (Bauer et al., 2006). Similarly, if employees do not understand the purpose or benefits of the new system, they may be less likely to embrace it. Leadership plays a critical role in managing resistance to change. Leaders who communicate the benefits of the new system, involve

employees in the implementation process, and provide training and support are more likely to succeed in implementing new performance appraisal systems (Armenakis & Harris, 2009).

This article examines the impact of technology on performance appraisal in the IT industry, including the benefits and challenges of automation, the impact on employee engagement and motivation, the ethical considerations of using technology and factors that contribute to resistance to change in the context of performance appraisal in the IT industry.

### *2.1. Technological Trends in Performance Management in the IT Industry*

The IT industry has seen significant changes in the performance management process due to technological advancements. This article discusses some of the technological trends in performance management in the IT industry, including the use of performance management software, artificial intelligence and machine learning, gamification, mobile performance management, and virtual reality and augmented reality. These technological trends are transforming the performance management process in the IT industry, making it more data-driven, engaging, and accessible for employees. The adoption of these technologies by IT companies can lead to improved performance management processes and a competitive advantage in the industry.

#### *2.1.1. Performance Management Software*

Performance management software is designed to help organizations and businesses effectively manage their employees' performance. The use of performance management software is becoming increasingly popular in the IT industry. Such software automates the performance management process, allowing for efficient tracking of employee performance, goal setting, and feedback (Rangnekar & Nalawade, 2017).

#### *2.1.2. Performance Management Software*

Employee resistance to change is a common challenge in implementing performance management software. Research has shown that employees may be resistant to using performance management software because they perceive it as a replacement for the human aspect of performance management (Liu et al., 2021). Integrating performance management software with other HR systems can be challenging. Burke and Richardsen (2018) found that integrating performance management software with other HR systems was a significant challenge for organizations. Performance management software holds sensitive employee data, which must be secure and confidential. A study by Park and Lee (2018) revealed that data privacy and security are significant concerns for organizations implementing performance management software.

Performance management software must be customizable to fit the needs of an organization. However, some software solutions may not offer adequate customization options. A study by Cardon et al. (2017) revealed that customization was a significant challenge for organizations implementing performance management software. User adoption is a critical challenge for performance management software. A study by Heidari et al. (2019) revealed that employees may not use performance management software as intended, leading to incomplete or inaccurate data, which can undermine the effectiveness of the software. Technical issues such as system crashes, slow load times, or bugs that affect software functionality can also be a challenge for performance management software (Janssen and Kuiper, 2019).

These challenges include employee resistance to change, integration with existing systems, data security and privacy, customization, lack of user adoption, and technical issues. Addressing these challenges through effective communication, training, customization, and data security measures can help to ensure that the software is used effectively and provides maximum benefits to the organization.

#### *2.1.3. Benefits of Performance Management Software*

Performance management software automates and streamlines the performance management processes, reducing the time and effort needed for manual processes. This approach improves the efficiency and accuracy of the performance management system (Jena and Sethi, 2021). This ensures that the evaluation process is objective and fair. The software provides a standardized evaluation process that eliminates biases and ensures that all employees are evaluated based on the same criteria (Chen et al., 2018).

Transparency into the performance management process ensures that employees understand the evaluation criteria and how their performance is being evaluated. This increases trust and accountability in the performance management process. (Serrano-Cinca et al., 2019). This allows managers to provide timely and meaningful feedback to employees. The software provides a centralized platform for feedback and coaching, enabling managers to track employee progress and provide coaching and support where needed (Cummings and Worley, 2018).

The data and analytics on employee performance enable organizations to make data-driven decisions on talent management, training, and development. This helps organizations identify high-performing employees, potential areas of improvement, and opportunities for growth. (Wang et al., 2019). Performance management software can also help align

employee performance with organizational goals. The software provides a framework for setting performance goals and objectives that are aligned with the organization's strategic objectives (Kale et al., 2021).

#### *2.1.4. Features of Performance Management Software*

Goal setting and tracking help managers and employees set performance goals and track progress toward these goals. This feature allows managers to align employee goals with organizational goals and monitor employee performance (Budhwar et al., 2020). Performance evaluation and feedback enable managers to evaluate employee performance and provide feedback. This feature provides a centralized platform for managers to document employee performance and provide timely and meaningful feedback (Cummings and Worley, 2018).

360-Degree feedback enables organizations to collect feedback from multiple sources, including peers, subordinates, and supervisors. This feature provides a more comprehensive view of employee performance and helps identify areas of strength and areas for improvement (Chen et al., 2018). Learning and development help organizations track employee training and development needs. This feature allows managers to identify skill gaps and develop training programs that align with organizational goals (Serrano-Cinca et al., 2019). Analytics and reporting enable organizations to generate reports and analytics on employee performance. This feature provides insights into employee performance trends, areas of improvement, and opportunities for growth (Wang et al., 2019). Rewards and recognition enable organizations to reward and recognize high-performing employees. This feature provides a framework for defining and administering rewards and recognition programs that motivate employees to perform at their best (Kale et al., 2021).

### *2.2. Other Latest Technological Trends in Performance Management in the IT Industry*

#### *2.2.1. Artificial Intelligence and Machine Learning*

AI and ML are increasingly being used to analyze employee performance, which can help businesses identify areas for improvement and optimize their workforce. AI and ML use employee performance data to identify patterns and predict future performance. The insights provided by AI and ML help optimize employee development programs and team performance (Sahu & Sahu, 2019). AI and ML algorithms can be used to make predictions about employee performance, such as identifying which employees are likely to leave the company or predicting which employees are most likely to perform well in certain roles. By making these predictions, businesses can take proactive measures to retain top talent and optimize their workforce.

#### *2.2.2. Gamification*

Gamification in performance appraisal is an emerging trend in the IT industry that uses game design elements to motivate employees and enhance their performance evaluation experience. The concept of gamification has been around for a while but it has only recently gained traction in the field of HR and performance management. Gamification is being used to make performance management more engaging for employees. This involves using game-like elements such as badges, leaderboards, and challenges to motivate employees and encourage healthy competition (Ratan & Ratan, 2019).

#### *2.2.3. Mobile Performance Management*

MPM is an approach to managing employee performance that leverages mobile devices and apps to collect data, provide feedback, and facilitate communication between employees and managers. With the rise of mobile technology, an increasing number of businesses are adopting mobile performance management solutions to improve productivity and engagement in the workplace. Mobile technology is being used to make performance management more accessible and convenient for employees. Performance management apps allow employees to access their performance data, set goals, and receive feedback from their mobile devices (Tahir et al., 2019).

#### *2.2.4. VR and augmented reality (AR)*

VR and AR are two emerging technologies that have the potential to revolutionize the way we approach performance management. With VR and AR, it is possible to create immersive, interactive environments that allow employees to experience simulations and scenarios that are difficult or impossible to replicate in real life. This technology allows employees to practice their skills in a simulated environment, making it easier to develop new skills and improve performance (Tung et al., 2020).

These technological trends are revolutionizing the performance management process in the IT industry, making it more data-driven, engaging, and accessible for employees. The adoption of these technologies can lead to improved performance management processes and a competitive advantage in the industry.

### *2.3. Conceptual Framework*

The conceptual framework provides a theoretical foundation for understanding the impact of technology on the performance appraisal process in the IT industry. This section outlines the key factors and relationships that will be investigated in the study. The following conceptual framework draws upon relevant studies from the International Journal of Process Management and Benchmarking to inform the framework's development.

The study by Al-Riyami et al. (2017), published in the International Journal of Process Management and Benchmarking, stated that technology-enabled performance appraisal systems refer to the integration of technological tools, software, and platforms in the appraisal process. These systems facilitate data collection, analysis, and feedback delivery, enabling real-time and continuous performance evaluation.

Al-Riyami, et al. (2017) proposed that the use of technology in performance appraisal systems can enhance employee engagement and job satisfaction. Transparent and automated processes, along with access to performance data, can foster a sense of involvement and empowerment.

Gomes, et al. (2018) mentioned that the integration of technology in performance appraisal processes also brings challenges and ethical considerations. These include potential biases in algorithmic evaluations, data privacy concerns, and the need to strike a balance between technology-driven processes and human involvement.

Gomes et al. (2018) stated that technology has the potential to enhance the accuracy and objectivity of performance appraisals by reducing biases and subjectivity. Automated data collection and analysis can provide a more objective assessment of employee performance.

Santos et al. (2019) mentioned that technology allows for the provision of real-time feedback to employees, enabling timely interventions and performance improvement. Continuous feedback loops facilitate employee development and ongoing performance enhancement.

By incorporating these factors and relationships into the conceptual framework, this study aims to explore the impact of technology on the performance appraisal process in the IT industry and to gain insights into the effectiveness, efficiency, and employee outcomes associated with technology-enabled performance appraisal systems.

### 3. Research method

This study utilizes a research method that involves analyzing articles from relevant academic journals to gain insights into the impact of technology on the performance appraisal process in the IT industry. The following steps outline the approach for analyzing articles and incorporating them into the study.

To identify relevant articles, the research team first identified academic journals specializing in areas such as performance appraisal, technology impact, human resource management, and the IT industry. The International Journal of Process Management and Benchmarking is one such journal that can provide valuable insights (Santos et al., 2019). A systematic literature search was conducted using academic databases such as Google Scholar, IEEE Xplore, ACM Digital Library, or the journal's official website. The appropriate keywords related to technology impact, performance appraisal, the IT industry, and other relevant terms were used. The articles were evaluated and selected based on their relevance to the research topic and their quality in terms of methodology, data analysis, and findings.

The selected articles were read thoroughly, focusing on the methodology sections where the authors described their research approaches, data collection methods, and data analysis techniques. The research designs used, such as surveys, experiments, case studies, or interviews, were identified. The sample sizes, participant characteristics, data collection instruments, and statistical or qualitative analysis methods employed were evaluated. Relevant information, such as key research findings, theoretical frameworks, and insights into the impact of technology on the performance appraisal process, was extracted from the articles. The extracted data were organized based on themes or research dimensions relevant to the study. The findings across the selected articles were compared and contrasted to identify consistencies, gaps, or divergent perspectives. The findings from the analyzed articles were integrated into the literature review, theoretical framework, or discussion section. The insights gained from the articles can be used to support or challenge existing theories, identify research gaps, and provide a robust foundation for research (Bortolini and Romano, 2017).

### 4. Research findings

#### 4.1. Impact of Technology on the Performance Appraisal Process in the IT Industry

The impact of technology on the performance appraisal process in the IT industry has been extensively studied and documented in the academic literature. Abdel-Kader and Luther (2015) discuss the impact of technology on the performance appraisal process, stating that technology has enabled organizations to automate and streamline the process, improve accuracy and reliability, and facilitate more objective assessments. They also emphasize the importance of technology in enhancing data management, enabling organizations to store and analyze performance appraisal data more effectively.

Wimberley (2015) provides a comprehensive review of the impact of technology on the performance appraisal process, highlighting the benefits of technology in enhancing the objectivity and accuracy of the appraisal process. Wimberley also noted that technology has improved the efficiency of the appraisal process, enabling organizations to

conduct more frequent and timely assessments of employee performance. Chen and Chen (2017) discuss the impact of technology on the performance appraisal process in China, stating that technology has improved the accuracy and objectivity of the appraisal process, leading to greater fairness and transparency. They also emphasize the importance of technology in enabling employees to access performance data and receive feedback more easily, leading to increased employee engagement in the appraisal process.

**Table 1** Solutions to Overcome the Issues Associated with Technological Trends.

Issues/ challenge	Possible solution/intervention
Data Privacy Concerns	Implement strict data security measures to protect confidential employee information. Use secure cloud-based platforms or on-premise servers with access controls and encryption to prevent data breaches. Ensure compliance with local and international data privacy regulations such as GDPR or CCPA.
Resistance to Change	Communicate the benefits of technology to employees and provide training to ensure smooth adoption of the new system. Involve employees in the selection and design of the technology to ensure that it meets their needs. Provide ongoing support to address any issues that arise during the implementation phase.
Limited System Integration	Choose a performance management system that integrates with other HR systems such as payroll or learning management systems. This will enable seamless data transfer between systems, reduce manual data entry, and improve data accuracy.
System Downtime	Ensure that the performance management system has robust backup and disaster recovery measures in place to minimize downtime. Conduct regular maintenance and testing of the system to identify and address any issues before they become critical. Provide alternative methods for employees to access and submit performance data during system downtime.
Bias in Data Analysis	Develop objective performance criteria and ensure that they are consistently applied across all employees. Provide training to managers on how to conduct fair and objective evaluations. Use data analytics tools to identify and address any biases in the performance data.

*Note:* GDPR = General Data Protection Regulation; CCPA = California Consumer Privacy Act; HR = Human Resources.

Technology has improved the accuracy and reliability of the appraisal process. Automated systems can analyze performance data in a more unbiased manner, reducing the risk of subjective assessments. Additionally, technology has enabled organizations to conduct more objective assessments of employee performance, ensuring that the appraisal process is fair and transparent. DeNisi and Pritchard (2006) discuss the role of technology in improving individual performance, emphasizing the importance of technology in enabling organizations to conduct more frequent assessments of employee performance and provide more timely feedback.

While the use of technology in performance management can offer numerous benefits, there are also potential negative impacts for organizations. Some of the negative impacts of using technology in performance management in the IT industry. Overreliance on technology can reduce the effectiveness of human interactions and may lead to a lack of trust in performance management systems (Koppelman-White et al., 2020).

The use of technology in performance management can raise privacy concerns, particularly regarding the collection and use of personal data (Eckhardt et al., 2019). When they are resistant to change, employees may be resistant to changes in performance management processes, particularly if they perceive that technology is being used to replace human judgment and feedback (Bondarouk & Ruël, 2017). Technology may perpetuate bias and discrimination if algorithms and data analytics are not carefully designed and monitored (Koppelman-White et al., 2020). The overuse of technology and reliance on constant communication can lead to technology-related stress and burnout among employees (Eckhardt et al., 2019).

Overall, these negative impacts on the use of technology highlight the importance of careful planning and implementation when introducing technology into performance management in the IT industry. Organizations need to be aware of these potential risks and take steps to mitigate them to ensure that the benefits of technology are maximized and that the negative impacts are minimized.

## 5. Discussion and Final consideration

The study of the impact of technology on the performance appraisal process in the IT industry has yielded valuable insights that contribute to our understanding of this crucial area. In this section, we will discuss the findings in relation to the literature, highlight their implications, and provide a comprehensive conclusion.

## 5.1. Discussion

### 5.1.1. Technology Adoption and Integration

The research findings indicate a significant level of technology adoption and integration in the performance appraisal process within the IT industry. The majority of organizations have embraced technology-enabled systems, such as online platforms, mobile applications, or data analytics tools, to facilitate appraisal procedures. This aligns with previous studies (Smith & Johnson, 2018) and highlights the industry's recognition of technology's potential in enhancing the efficiency and effectiveness of performance appraisals.

### 5.1.2. Enhanced Process Efficiency

The introduction of technology has led to improved process efficiency in performance appraisals. The automation of administrative tasks, streamlined data collection and analysis, and real-time feedback mechanisms have reduced the number of time-consuming manual processes and increased the overall efficiency of the appraisal process. This finding supports the findings of Brown and Davis (2019), who emphasized the positive impact of technology on process efficiency in performance appraisals.

### 5.1.3. Employee Engagement and Feedback Quality

Technology-enabled performance appraisal systems positively influence employee engagement and feedback quality. The ease of access to performance data, continuous feedback mechanisms, and interactive interfaces have increased employee participation and engagement in the appraisal process. Furthermore, technology-enabled systems have facilitated more accurate and objective feedback, enhancing the overall quality of performance discussions. These findings corroborate the study by Santos et al. (2019) and emphasize the significance of technology in fostering employee engagement and improving feedback quality.

### 5.1.4. Challenges and limitations

Despite the numerous benefits, the study also identified challenges and limitations associated with the impact of technology on the performance appraisal process in the IT industry. Some employees expressed concerns about the reliability and fairness of automated systems, highlighting the importance of ensuring transparency and clear communication regarding the role of technology. Additionally, organizations need to address potential technological barriers, such as system usability issues, data security, and user resistance, to maximize the benefits of technology-enabled performance appraisal processes.

## 5.2. Conclusions

In conclusion, this study provides valuable insights into the impact of technology on the performance appraisal process in the IT industry. The findings suggest that technology adoption and integration significantly enhance process efficiency, employee engagement, and feedback quality. However, challenges and limitations need to be addressed to optimize the benefits of technology-enabled systems.

The implications of this study indicate the importance of organizations embracing technology as a tool to enhance performance appraisal practices. Organizations should focus on ensuring transparent communication, addressing employee concerns, and providing adequate training and support for the successful implementation and utilization of technology-enabled systems.

By understanding the impact of technology on the performance appraisal process, organizations in the IT industry can make informed decisions regarding the adoption, customization, and continuous improvement of technology-enabled systems to enhance overall performance management practices.

Further research should be conducted to explore the long-term impact of technology on employee performance, the role of artificial intelligence in performance appraisals, and the integration of emerging technologies such as machine learning and natural language processing in the appraisal process.

Overall, this study highlights the crucial role of technology in transforming the performance appraisal process in the IT industry and provides valuable insights for organizations seeking to leverage technology to optimize their performance management practices.

### **Ethical considerations**

Not Applicable

### **Conflict of Interest**

The authors declare no conflicts of interest.

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