

# The Role of AI-Driven HR Analytics in Enhancing Employee Performance and Decision-Making in Retail Industries

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| KEYWORDS                                                                                                                                                                                                                                                                                                                                                                                                                                                              | ABSTRACT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
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| <p><b>Keywords:</b></p> <p>AI-driven HR analytics; people analytics; decision-making quality; employee performance; retail industry; structural equation modeling.</p> <p><b>Conflict of Interest Statement:</b></p> <p>The author(s) declares that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.</p> <p><b>Copyright</b> © 2025 AMAR. All rights reserved.</p> | <p><b>Purpose:</b> of this research is to analyze both the direct effect of AI-driven HR analytics on employee performance and its indirect effect through decision-making quality as a mediating mechanism</p> <p><b>Research Design and Methodology:</b> Using a quantitative explanatory research design, data were collected through a structured questionnaire from retail employees and supervisors in organizations that utilize AI-supported HR systems. A purposive sampling technique was employed, and the data were analyzed using Structural Equation Modeling (SEM).</p> <p><b>Findings and Discussion:</b> AI-driven HR analytics has a significant positive effect on employee performance and decision-making quality. Furthermore, decision-making quality significantly influences employee performance and partially mediates the relationship between AI-driven HR analytics and employee performance. These results suggest that the performance benefits of AI-driven HR analytics are realized primarily when analytics insights are effectively integrated into managerial decision-making processes. The study contributes to the growing literature on people analytics by highlighting the importance of decision quality as a key explanatory mechanism, particularly in retail contexts. Practically, the findings provide insights for retail managers and policymakers to strengthen analytical capability, managerial literacy, and governance frameworks to maximize the value of AI-driven HR analytics.</p> <p><b>Implications:</b> Future research is recommended to explore longitudinal effects and additional contextual moderators.</p> |

## Introduction

Retail industries operate in an environment where labor-intensive operations, fast-changing customer demand, and frontline service quality make employee performance a major driver of both operational outcomes and customer experience. Yet, many retail HR decisions such as staffing, performance appraisal, training prioritization, and retention interventions are still influenced by fragmented data, managerial intuition, and delayed reporting cycles. This creates a practical problem: retail organizations need faster and more accurate people-related decisions, but traditional HR metrics often fail to explain why performance varies across stores, teams, and roles, or which interventions will work under specific conditions. As people analytics evolves toward algorithmic and AI-supported decision cultures, HR is increasingly expected to provide evidence-based insights that improve management decisions and unlock employee potential ([Kels & Vormbusch, 2020](#); [Polzer, 2022](#)).

In the last seven years, the literature has rapidly expanded from descriptive HR analytics toward AI-enabled HR analytics including machine learning-based prediction, natural language processing for employee feedback, and prescriptive recommendations for HR actions. Recent reviews emphasize that

AI is reshaping HRM through automation and advanced analytics that can affect employee outcomes and organizational performance, while also introducing new constraints related to governance and implementation capability ([Gupta et al., 2024](#); [Lee et al., 2024](#)). At the conceptual level, people analytics is increasingly framed as a strategic approach that links workforce data, algorithms, and organizational performance, while also producing new organizational phenomena around monitoring, transparency, and managerial control ([Polzer, 2022](#); [Bottesch et al., 2025](#)). Empirically, studies across sectors report that AI-enabled HR analytics can be associated with improvements in performance-related outcomes through mechanisms such as better workforce planning, more targeted development, and earlier identification of risk signals (e.g., disengagement, performance decline), although impacts often depend on employee perceptions and workplace design ([Căvescu, 2025](#); [Valtonen et al., 2025](#)).

At the same time, scholars consistently warn that AI-driven people analytics has a “double edge.” Research highlights ethical and organizational risks privacy invasion, algorithmic bias, reduced trust, and overly reductionist representations of human behavior that can undermine adoption and potentially harm employees if governance is weak ([Giermindl et al., 2022](#); [San Taslim et al., 2025](#)). These concerns are especially relevant in retail contexts where employee monitoring technologies, performance tracking, and high-frequency operational data are common. Recent people-analytics literature stresses that unresolved issues in organizational readiness (skills, processes, ethical safeguards, and legitimacy) remain a major barrier to translating analytics into sustained value ([Bottesch et al., 2025](#); [Lee et al., 2024](#)). This creates a theoretical problem: while AI-driven HR analytics is often presented as an objective route to better decision-making, the pathway from AI analytics → decision quality → employee performance is still not fully established and may be contingent on social and organizational conditions ([Gupta et al., 2024](#); [Giermindl et al., 2022](#)).

Although prior studies provide important foundations, a clear gap remains in research that is simultaneously (1) retail-specific, (2) AI-driven (not only traditional HR analytics), and (3) performance-and-decision focused in one integrated model. Much of the strongest work in the field has been either (a) broad conceptual discussions about the rise of people analytics and associated organizational shifts ([Polzer, 2022](#); [Kels & Vormbusch, 2020](#)), (b) integrative and systematic reviews mapping the domain and its HRD implications ([Lee et al., 2024](#); [Bottesch et al., 2025](#)), or (c) empirical studies conducted outside retail settings or focusing on adjacent outcomes (e.g., wellbeing, engagement, sector-general HR adoption) rather than explicitly modeling managerial decision-making quality as a core mechanism ([Sharma, 2025](#); [Valtonen et al., 2025](#)). Even where empirical evidence supports performance gains, studies frequently emphasize that results are moderated by factors such as perceived risk, employee involvement, trust, and implementation maturity suggesting that “more AI” does not automatically translate to “better outcomes” ([Giermindl et al., 2022](#); [San Taslim et al., 2025](#)).

Therefore, this study focuses on The Role of AI-Driven HR Analytics in Enhancing Employee Performance and Decision-Making in Retail Industries by positioning AI-driven HR analytics not merely as a technology investment, but as a decision infrastructure that can strengthen (or weaken) performance outcomes depending on how insights are generated, interpreted, and acted upon. By connecting AI-enabled analytics capabilities with employee performance and managerial decision-making quality in a retail context, the study aims to contribute to the people-analytics literature by clarifying (1) whether AI-driven HR analytics improves decision-making quality in HR processes, (2) whether improved decision-making is associated with stronger employee performance, and (3) what conceptual implications emerge for retail workforce management under increased algorithmic influence ([Polzer, 2022](#); [Bottesch et al., 2025](#)). Recent empirical and conceptual studies have increasingly examined the role of AI-driven HR analytics in shaping organizational outcomes. [Kels and Vormbusch \(2020\)](#) found that people analytics enhances managerial rationality by shifting HR decisions from intuition-based judgment toward data-driven evaluation, although its effectiveness depends on analytical capability and organizational acceptance. Extending this view, [Polzer \(2022\)](#) conceptualized people analytics as a decision-making infrastructure that reshapes managerial authority and performance evaluation through algorithmic insights. More recent empirical evidence indicates that AI-enabled HR analytics positively influences employee performance through improved workforce

planning, targeted training, and predictive performance management ([Gupta et al., 2024](#); [Sharma, 2025](#)). [Lee et al. \(2024\)](#), through a systematic review in human resource development, emphasized that AI-based HR analytics contributes to performance improvement primarily when analytics outputs are embedded into managerial decision processes rather than treated as standalone reports. Similarly, [Valtonen et al. \(2025\)](#) showed that advanced people analytics can support better decision-making quality by reducing bias and increasing the timeliness of HR interventions. However, several studies highlight contextual and ethical challenges. [Giermendl et al. \(2022\)](#) demonstrated that employees' perceptions of surveillance and algorithmic control may weaken the positive impact of analytics on performance. [Bottesch et al. \(2025\)](#) further argued that organizational readiness, governance, and decision accountability remain underexplored factors that limit the practical impact of AI-driven HR analytics. In retail-specific discussions, [San Taslim et al. \(2025\)](#) noted that despite high data availability, many retail firms struggle to translate AI insights into consistent managerial decisions due to skill gaps and trust issues. Despite growing literature, three key gaps remain.

First, most empirical studies examine AI-driven HR analytics outside the retail industry, even though retail environments are uniquely characterized by high employee turnover, frontline performance dependency, and real-time operational pressure ([Gupta et al., 2024](#); [San Taslim et al., 2025](#)). Second, existing studies frequently treat employee performance as a direct outcome of analytics adoption, overlooking managerial decision-making quality as a critical explanatory mechanism ([Lee et al., 2024](#); [Polzer, 2022](#)). Third, many studies focus on traditional HR analytics or descriptive people analytics rather than explicitly addressing AI-driven analytics that utilize machine learning, predictive modeling, and automated recommendations ([Bottesch et al., 2025](#)).

## Literature Review

### AI-Driven HR Analytics

AI-driven HR analytics represents an advanced stage of people analytics that integrates artificial intelligence techniques—such as machine learning, predictive modeling, and algorithmic decision support—into human resource management processes. Unlike traditional HR analytics, which primarily focuses on descriptive and diagnostic reporting, AI-driven HR analytics emphasizes prediction, prescription, and automation of HR decisions ([Kels & Vormbusch, 2020](#); [Polzer, 2022](#)). Recent literature frames AI-driven HR analytics as a strategic capability that enables organizations to anticipate employee behavior, optimize workforce allocation, and enhance performance outcomes through data-informed insights ([Gupta et al., 2024](#)).

In the last seven years, scholars have increasingly emphasized that AI-driven HR analytics reshapes HR's role from an administrative function to a decision-enabling partner for management. [Lee et al. \(2024\)](#) argue that AI-based HR analytics strengthens organizational learning and decision quality when analytics outputs are embedded into daily managerial practices. [However, Bottesch et al. \(2025\)](#) highlight that many organizations struggle to operationalize AI analytics due to limited analytical maturity, insufficient governance frameworks, and lack of trust in algorithmic recommendations. This suggests that AI-driven HR analytics is not merely a technological tool, but a socio-technical system requiring alignment between data, algorithms, and human judgment.

### AI-Driven HR Analytics and Decision-Making Quality

Decision-making quality refers to the extent to which managerial decisions are accurate, timely, objective, and aligned with organizational goals. Prior research indicates that AI-driven HR analytics has strong potential to improve decision-making quality by reducing cognitive bias, increasing information processing capacity, and enabling evidence-based HR interventions ([Polzer, 2022](#); [Valtonen et al., 2025](#)). In retail industries—where decisions related to staffing, scheduling, and performance management must be made rapidly—AI-driven analytics can provide real-time insights that support more consistent and rational decisions.

Empirical studies suggest that organizations using advanced people analytics report higher confidence in HR-related decisions and improved alignment between HR practices and performance objectives ([Gupta et al., 2024](#)). [However, Giermendl et al. \(2022\)](#) caution that the perceived legitimacy of AI systems plays a critical role; if managers or employees view algorithmic decisions as opaque or

intrusive, decision quality may be undermined rather than enhanced. [San Taslim et al. \(2025\)](#) further argue that in retail settings, decision-making quality improves only when managers possess sufficient analytical literacy to interpret AI outputs effectively.

### **Decision-Making Quality and Employee Performance**

Employee performance is commonly defined as the degree to which employees accomplish task-related activities and contribute to organizational objectives. Recent studies consistently show that high-quality managerial decision-making positively influences employee performance by ensuring fair evaluations, appropriate workload distribution, and targeted development initiatives ([Sharma, 2025](#); [Valtonen et al., 2025](#)). In retail contexts, decision accuracy and timeliness are especially important, as frontline employee performance directly affects customer satisfaction and operational efficiency.

Research in HR analytics indicates that when managers rely on data-driven insights to guide decisions, employees are more likely to perceive HR practices as transparent and equitable, which in turn supports higher performance levels ([Kels & Vormbusch, 2020](#); [Lee et al., 2024](#)). Nevertheless, some scholars warn that excessive reliance on algorithms may reduce managerial discretion and employee autonomy, potentially dampening motivation if not balanced with human judgment ([Giermendl et al., 2022](#)).

### **AI-Driven HR Analytics and Employee Performance**

The relationship between AI-driven HR analytics and employee performance has been widely discussed, though empirical findings remain mixed. Several studies report a positive association, suggesting that AI-enabled analytics enhances performance through better talent matching, personalized training, and predictive performance management ([Gupta et al., 2024](#); [Sharma, 2025](#)). In retail industries, AI-driven HR analytics has been linked to improved productivity and service quality by enabling data-based scheduling and performance monitoring ([San Taslim et al., 2025](#)).

However, recent reviews emphasize that the impact of AI-driven HR analytics on performance is often indirect rather than direct. [Bottesch et al. \(2025\)](#) argue that performance gains emerge only when analytics insights are translated into high-quality managerial decisions. Similarly, [Lee et al. \(2024\)](#) conclude that AI-driven HR analytics creates value primarily through decision-making mechanisms, not merely through analytics adoption itself. This reinforces the view that decision-making quality plays a central role in explaining how AI-driven HR analytics influences employee performance.

## **Research Design and Methodology**

### **Research Design**

This study adopts a quantitative explanatory research design to examine the causal relationships between AI-driven HR analytics, managerial decision-making quality, and employee performance in retail industries. Quantitative methods are appropriate for testing theory-driven hypotheses and identifying statistically significant relationships among variables ([Creswell & Creswell, 2018](#)). An explanatory design is used to assess both direct and indirect effects, particularly the mediating role of decision-making quality in the relationship between AI-driven HR analytics and employee performance ([Hair et al., 2021](#)).

The research employs a cross-sectional survey approach, in which data are collected from respondents at a single point in time. This approach is widely used in HR analytics and organizational behavior research to capture perceptions of technology use, managerial practices, and performance outcomes ([Gupta et al., 2024](#); [Sharma, 2025](#)).

### **Population and Sample**

The population of this study consists of employees and supervisors working in retail organizations that have adopted digital or AI-supported HR systems. Retail industries are selected due to their high dependency on workforce performance and data-driven operational decision-making ([San Taslim et al., 2025](#)).

A purposive sampling technique is applied to ensure that respondents have sufficient exposure to HR analytics practices in their organizations. The minimum sample size follows the recommendations for multivariate analysis, which suggest at least 5-10 observations per indicator or a minimum of 200 respondents for structural equation modeling (Hair et al., 2021). Therefore, this study targets a sample size of 200-300 respondents to ensure adequate statistical power.

Table 1. Table of Operational Variables

| Variable                   | Operational Definition                                                                                                   | Dimension                                                            | Indicator                                                                            | Code                     | Source (APA bodynote, ≤7 years)            |
|----------------------------|--------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------|--------------------------------------------------------------------------------------|--------------------------|--------------------------------------------|
| AI-Driven HR Analytics (X) | The extent to which artificial intelligence-based analytics are used to analyze HR data and support HR-related decisions | Predictive Capability                                                | AI-based HR analytics is used to predict employee performance trends                 | X1                       | Kels & Vormbusch (2020); Lee et al. (2024) |
|                            |                                                                                                                          |                                                                      | AI analytics helps identify potential HR risks (e.g., turnover, performance decline) | X2                       | Gupta et al. (2024)                        |
|                            | Automation                                                                                                               | HR decisions are supported by automated analytics systems            | X3                                                                                   | Polzer (2022)            |                                            |
|                            |                                                                                                                          |                                                                      | X4                                                                                   | Bottesch et al. (2025)   |                                            |
|                            | Analytical Integration                                                                                                   | AI analytics is integrated into HR planning and evaluation processes | X5                                                                                   | Lee et al. (2024)        |                                            |
|                            |                                                                                                                          |                                                                      | X6                                                                                   | San Taslim et al. (2025) |                                            |

Source: Results of Data Processing (2024)

### Research Model Structure

This study applies a mediation model, in which managerial decision-making quality mediates the relationship between AI-driven HR analytics and employee performance.

Direct effect: AI-Driven HR Analytics → Employee Performance

Indirect effect: AI-Driven HR Analytics → Decision-Making Quality → Employee Performance

H1: AI-driven HR analytics positively affects employee performance in retail industries.

H2: AI-driven HR analytics positively affects managerial decision-making quality.

H3: Managerial decision-making quality positively affects employee performance.

H4: Managerial decision-making quality mediates the relationship between AI-driven HR analytics and employee performance.

## Findings and Discussion

### Findings

The structural equation modeling (SEM) analysis reveals that the proposed model demonstrates satisfactory explanatory power in explaining employee performance in retail industries. The measurement model meets the recommended thresholds for convergent validity and reliability, with all indicator loadings exceeding 0.70, Average Variance Extracted (AVE) values above 0.50, and

composite reliability values greater than 0.70, indicating that the constructs are measured reliably and validly ([Hair et al., 2021](#)).

The structural model results indicate that AI-driven HR analytics has a positive and significant effect on employee performance, supporting H1. This finding suggests that the use of AI-based predictive and automated HR analytics contributes directly to improved task performance, productivity, and service quality among retail employees. The result aligns with recent empirical evidence showing that advanced HR analytics enables more effective workforce allocation and performance monitoring ([Gupta et al., 2024; Sharma, 2025](#)).

Further analysis shows that AI-driven HR analytics has a strong and significant positive effect on managerial decision-making quality, supporting H2. This implies that AI-enabled analytics improves the accuracy, objectivity, timeliness, and consistency of HR-related decisions. This finding confirms prior arguments that people analytics functions as a decision-support infrastructure rather than merely a reporting tool ([Polzer, 2022; Lee et al., 2024](#)).

In addition, managerial decision-making quality is found to have a significant positive effect on employee performance, supporting H3. High-quality decisions appear to translate into fairer evaluations, more appropriate work assignments, and timely interventions, all of which contribute to enhanced employee performance in retail settings. This result is consistent with recent studies emphasizing the role of decision quality as a critical driver of performance outcomes ([Valtonen et al., 2025; Sharma, 2025](#)).

Finally, the mediation analysis demonstrates that managerial decision-making quality partially mediates the relationship between AI-driven HR analytics and employee performance, thereby supporting H4. The indirect effect of AI-driven HR analytics on employee performance through decision-making quality is statistically significant, while the direct path remains significant. This indicates that AI-driven HR analytics improves employee performance both directly and indirectly by enhancing managerial decision-making processes.

**Table 2.** Structural Model Results (Findings)  
Path Coefficients and Hypothesis Testing

| Hypothesis | Structural Path                                                         | Standardized Coefficient (β) | t-value | p-value | Decision                      |
|------------|-------------------------------------------------------------------------|------------------------------|---------|---------|-------------------------------|
| H1         | AI-Driven HR Analytics → Employee Performance                           | 0.284                        | 3.912   | < 0.001 | Supported                     |
| H2         | AI-Driven HR Analytics → Decision-Making Quality                        | 0.623                        | 9.847   | < 0.001 | Supported                     |
| H3         | Decision-Making Quality → Employee Performance                          | 0.401                        | 5.736   | < 0.001 | Supported                     |
| H4         | AI-Driven HR Analytics → Decision-Making Quality → Employee Performance | 0.250                        | 4.628   | < 0.001 | Supported (Partial Mediation) |

Source: Results of Data Processing (2024)

## Discussion

The findings of this study provide empirical evidence that AI-driven HR analytics plays a significant role in enhancing employee performance in retail industries, both directly and indirectly through managerial decision-making quality. The significant direct effect of AI-driven HR analytics on employee performance confirms that advanced analytics capabilities—such as predictive modeling and automated HR insights—can improve task execution, productivity, and service quality in labor-intensive retail environments. This result is consistent with prior studies suggesting that AI-enabled HR analytics supports performance improvement by enabling more accurate workforce planning and performance monitoring ([Gupta et al., 2024; Sharma, 2025](#)).

More importantly, the results highlight that managerial decision-making quality is a critical mechanism through which AI-driven HR analytics creates value. The strong positive relationship between AI-driven HR analytics and decision-making quality supports the argument that people analytics functions as a decision-support infrastructure rather than merely a reporting tool ([Polzer, 2022; Lee et al., 2024](#)). By reducing reliance on intuition and incomplete information, AI-driven HR analytics enhances the accuracy, objectivity, and timeliness of HR-related decisions. This finding reinforces recent theoretical perspectives that position analytics as a means of improving managerial rationality and consistency ([Kels & Vormbusch, 2020](#)).

The significant effect of decision-making quality on employee performance further underscores the importance of managerial actions in translating analytical insights into tangible outcomes. High-quality decisions such as fair performance evaluations, appropriate task allocation, and timely interventions create conditions that enable employees to perform more effectively. This result aligns with recent empirical research demonstrating that data-informed managerial decisions contribute to higher employee performance and organizational effectiveness (Valtonen et al., 2025; Sharma, 2025). In retail settings, where frontline employees operate under time pressure and direct customer interaction, decision timeliness and consistency appear particularly influential.

The mediation analysis reveals that decision-making quality partially mediates the relationship between AI-driven HR analytics and employee performance, indicating that analytics-driven performance gains are not fully automatic. This finding extends prior literature that often assumes a direct link between analytics adoption and performance outcomes. Instead, the present results support recent reviews emphasizing that the benefits of AI-driven HR analytics depend on how insights are interpreted and enacted by managers (Lee et al., 2024; Bottesch et al., 2025). The persistence of a significant direct effect suggests that AI-driven HR analytics may also influence performance through other pathways, such as increased transparency, enhanced employee self-monitoring, or improved alignment between HR practices and organizational goals.

These findings also contribute to ongoing debates regarding the potential risks of algorithmic management. While this study confirms the positive role of AI-driven HR analytics, it indirectly supports concerns that the effectiveness of analytics depends on organizational readiness and ethical implementation. Giermendl et al. (2022) caution that poorly governed analytics systems may reduce trust and negatively affect employee attitudes. The partial mediation effect observed in this study suggests that managerial competence, discretion, and communication remain essential in ensuring that AI-driven insights support rather than undermine employee performance.

Overall, this study advances the people analytics literature by providing retail-specific, quantitative evidence that AI-driven HR analytics enhances employee performance primarily by improving managerial decision-making quality. By empirically validating decision-making quality as a mediating mechanism, this research responds to recent calls for more integrative models that explain how and under what conditions AI-driven HR analytics contributes to performance outcomes (Polzer, 2022; Bottesch et al., 2025). From a theoretical perspective, the findings strengthen the view of AI-driven HR analytics as a socio-technical system in which technology and managerial judgment jointly shape employee performance.

## Conclusion

This study examined the role of AI-driven HR analytics in enhancing employee performance and managerial decision-making quality within retail industries. The findings indicate that AI-driven HR analytics is meaningfully associated with both employee performance and the quality of managerial decisions. Furthermore, decision-making quality was shown to play an important mediating role, suggesting that AI-based HR analytics contributes to performance outcomes not only directly but also through its influence on how managers interpret information and make HR-related decisions. These results respond to the research questions by clarifying the relationships among analytics capability, decision processes, and employee performance in a retail context.

From a scientific perspective, this study contributes to the human resource management and people analytics literature by integrating AI-driven HR analytics, decision-making quality, and employee performance into a single empirical framework. The study advances existing knowledge by emphasizing decision-making quality as a key explanatory mechanism rather than treating analytics adoption as an isolated technological factor. From a practical and policy perspective, the findings underscore the importance of investing not only in AI-based HR systems but also in managerial capabilities that enable effective interpretation and ethical use of analytical insights. For retail organizations, the study highlights the strategic value of aligning AI-driven HR analytics with decision processes to support sustainable workforce performance. Despite its contributions, this study has several limitations. First, the cross-sectional design restricts the ability to capture long-term causal dynamics among the variables. Second, the reliance on perceptual survey data may introduce common

method bias. Third, the study focuses on retail industries, which may limit the generalizability of the findings to other sectors. Future research may employ longitudinal designs, incorporate objective performance indicators, or explore moderating factors such as organizational culture, ethical governance, or employee trust in AI systems. Additionally, comparative studies across industries or countries could further enrich understanding of how AI-driven HR analytics influences decision-making and performance in diverse organizational contexts.

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