



**AI-Mediated Leadership and Leader–Member Exchange Quality: A Social Exchange
Perspective on Fairness and Transparency**

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Abstract

The growing use of artificial intelligence in people management is changing how employees experience leadership and evaluate their relationships with managers and organizations. AI-supported systems increasingly contribute to scheduling, work allocation, employee development, recruitment, and performance monitoring. This study examines the relationships between AI-mediated leadership practices, leader–member exchange quality, and perceived social exchange quality. Fairness and transparency are employed as interpretive lenses for understanding these relationships rather than as independently measured variables. Drawing on Leader–Member Exchange Theory and Social Exchange Theory, the study adopted a quantitative, cross-sectional survey design. Data were collected from 54 employees representing different organizational functions and levels of exposure to AI-supported people management. Pearson correlation and simple linear regression analyses were conducted to test the proposed relationships. AI-mediated leadership practices were positively associated with leader–member exchange quality ($r=.512, p<.001$) and perceived social exchange quality ($r=.478, p<.001$). The regression results indicated that AI-mediated leadership practices explained 26.2% of the variance in leader–member exchange quality and 22.9% of the variance in perceived social exchange quality. These findings provide exploratory evidence that employees' experiences of AI-supported management are meaningfully associated with relational outcomes. However, they do not demonstrate that increased automation causes stronger workplace relationships. The study highlights the continued importance of human accountability, meaningful explanation, employee voice, and relational leadership when AI informs people management decisions. It contributes to the literature by distinguishing employees' relationships with immediate leaders from their broader social exchange relationships with organizations. Future research should directly measure perceived fairness and transparency and examine their roles using larger, longitudinal, and multi-organizational samples.

Keywords: AI-mediated leadership, leader–member exchange, social exchange, algorithmic management, fairness, transparency, employee relations

1. Introduction

1.1 Background of the Study

Artificial intelligence is assuming a growing role in organizational activities previously performed primarily through human managerial judgment. AI-supported technologies are now used to recommend employee development opportunities, prepare work schedules, allocate assignments, screen applicants, and monitor employee productivity. These applications allow organizations to process extensive information and standardize selected management procedures. At the same time, they introduce new questions concerning how employees experience leadership when managerial decisions are partially shaped by technological systems (Benbya et al., 2020; Quaquebeke & Gerpott, 2023).

Leadership is fundamentally relational. Employees do not evaluate their leaders only according to the outcomes of individual decisions; they also assess whether leaders communicate honestly, understand their needs, recognize their contributions, and accept responsibility for managerial choices. These repeated evaluations form the basis of leader–member exchange quality. High-quality exchanges are generally characterized by trust, mutual respect, support, and meaningful communication, whereas lower-quality exchanges tend to remain formal and economically transactional (Graen & Uhl-Bien, 1995).

The involvement of AI can alter these relational evaluations. When leaders use algorithmic recommendations, employees may be uncertain about the actual source of a decision and the degree of discretion retained by the leader. They may question whether the leader reviewed the recommendation, considered contextual information, or simply accepted the system’s output. Such uncertainty can affect trust even when the resulting decision appears technically reasonable.

AI-mediated leadership may nevertheless support high-quality relationships when technology is used to strengthen rather than replace human judgment. AI can help leaders recognize workload patterns, identify development needs, and apply consistent procedures. When leaders explain the role of the system and remain available to discuss its recommendations, employees may perceive AI as a useful component of responsible leadership.

Difficulties are more likely when AI-supported decisions are presented as unquestionable or when leaders distance themselves from their consequences. Employees may feel that their individual circumstances have been ignored or that they have been reduced to performance indicators. Algorithmic management may consequently become a contested form of organizational control in which employees negotiate autonomy, visibility, and the legitimacy of technology-based evaluation (Kellogg et al., 2020).

Fairness is central to these evaluations. Employees consider whether the same procedures are applied consistently, whether the information used by the system is accurate, and whether the outcome appropriately reflects their circumstances. An algorithm may be procedurally consistent but still be perceived as unfair if its data or decision criteria are incomplete. Employees may also distinguish between the fairness of the outcome and the fairness of the process through which it was reached.

Transparency is similarly important because it concerns whether employees can understand how AI participates in people management. Employees may not require access to every technical feature of an algorithm, but they need sufficient information to understand the purpose of the system, the data it uses, and the role of human judgment. Transparency can also clarify accountability by identifying who is responsible for reviewing and communicating an AI-supported decision.

Fairness and transparency are treated in this study as interpretive conditions surrounding AI-mediated leadership. They are not analyzed as separate empirical constructs because the research instrument did not include dedicated multi-item measures for them. Their relevance instead arises from the broader literature and from their importance in explaining how employees interpret AI-supported decisions.

Employee evaluations extend beyond their relationships with immediate leaders. AI-supported management can also influence how employees understand their relationship with the organization. Social Exchange Theory proposes that employees assess whether the organization values their contributions, supports their well-being, and fulfills reciprocal obligations (Blau, 1964). People management systems can communicate organizational priorities, particularly when they influence access to work, recognition, development, or career advancement.

A responsibly implemented AI system may signal that the organization values consistency and evidence-based decision-making. Conversely, an opaque or inflexible system may suggest that efficiency and control are more important than individual recognition. Employees' interpretations of AI-mediated leadership can therefore influence both leader–member exchange quality and perceived social exchange quality.

This study focuses on these two relational outcomes. It examines whether employees' perceptions of AI-mediated leadership practices are associated with the quality of their relationships with immediate leaders and with the perceived quality of their broader exchanges with their organizations.

1.2 Problem Statement

Organizations are adopting AI-supported people management systems without fully understanding how these systems affect the relational foundations of leadership. Although AI can assist leaders in processing information and applying consistent procedures, people management decisions cannot be separated from trust, recognition, accountability, and interpersonal communication.

The central problem is that technological efficiency may be achieved while relational quality deteriorates. Employees may receive a technically generated schedule, performance assessment, or development recommendation without understanding how it was produced or whether their leader considered relevant circumstances. When this occurs, employees may perceive that the leader has transferred responsibility to the system.

The problem is particularly important because AI-supported decisions can affect employees' daily work and long-term career opportunities. Park et al. (2021) found that employees may resist

algorithmic evaluation when it creates additional burdens or appears incapable of capturing the full context of their performance. Such resistance may reflect concerns about legitimacy and accountability rather than a general refusal to accept technological innovation.

The use of AI may also alter employees' perceptions of social exchange. If employees believe that an organization uses AI primarily to increase surveillance or control, they may question whether the organization values them as individuals. If AI is accompanied by explanation, employee participation, and human review, employees may interpret it as part of a more supportive organizational exchange.

Consequently, the relevant question is not simply whether AI is used. The problem concerns how AI-mediated leadership is associated with employees' relationships with leaders and organizations. Empirical examination of these relationships is necessary to help organizations introduce AI without weakening trust, reciprocity, and meaningful human leadership.

1.3 Research Gap

Research on AI in organizations has expanded considerably, but several gaps remain in relation to leader–employee relationships. First, much of the literature concentrates on technical adoption, organizational efficiency, ethical risks, or employee acceptance. Fewer studies directly examine leader–member exchange as an outcome of AI-mediated leadership.

Second, research on algorithmic management frequently emphasizes control and resistance without fully connecting these issues to employees' reciprocal relationships with organizations. Leader–member exchange and perceived social exchange quality are related but distinct. The first concerns the relationship with the immediate leader, whereas the second reflects how employees evaluate their relationship with the organization. Examining both provides a broader understanding of relational followership.

Third, fairness and transparency are widely identified as important principles of responsible AI, but their relevance to leadership relationships requires further explanation. Employees may judge an AI-supported practice through its perceived fairness and understandability even when these qualities are not formally measured as separate variables. The current study uses these principles to interpret the relationship between AI-mediated leadership and relational outcomes while avoiding unsupported claims of mediation or moderation.

The study addresses these gaps by examining whether AI-mediated leadership practices predict leader–member exchange quality and perceived social exchange quality. In doing so, it connects the growing use of AI in people management with established relational theories of leadership and organizational behavior.

1.4 Research Objectives

The general objective of this study is to examine how AI-mediated leadership practices relate to the quality of employees' relationships with their leaders and organizations.

The study specifically aims to:

1. Examine the relationship between AI-mediated leadership practices and leader–member exchange quality.
2. Determine the relationship between AI-mediated leadership practices and perceived social exchange quality.

1.5 Research Questions

In direct alignment with the research objectives, this study addresses the following questions:

RQ1: What is the relationship between AI-mediated leadership practices and leader–member exchange quality?

RQ2: What is the relationship between AI-mediated leadership practices and perceived social exchange quality?

1.6 Significance of the Study

This study contributes theoretically by extending Leader–Member Exchange Theory into AI-mediated organizational environments. It examines whether relationship quality remains connected to employees’ evaluations of leadership when AI systems influence managerial activities. It also applies Social Exchange Theory to explain how AI-supported practices may shape employees’ perceptions of organizational recognition and reciprocity.

Empirically, the study examines two relational outcomes using the same organizational context. This allows it to distinguish between employees’ relationships with immediate leaders and their broader exchanges with organizations.

Practically, the findings can help leaders and human resource professionals recognize that AI adoption has relational consequences. Organizations should not evaluate AI-supported systems solely through speed, accuracy, or cost efficiency. They should also monitor whether employees feel understood, valued, supported, and able to question important decisions.

The study further highlights the practical importance of fairness and transparency. Although these principles were not measured as separate constructs, they provide important guidance for implementation. Leaders should explain how AI informs decisions, verify the accuracy of relevant information, consider individual circumstances, and accept responsibility for final outcomes.

Responsible AI-mediated leadership therefore requires a balance between technological capability and human accountability. Preserving this balance can help organizations benefit from AI while maintaining trust and reciprocal relationships.

2. Literature Review

2.1 AI-Mediated Leadership and Algorithmic People Management

AI-mediated leadership describes organizational situations in which artificial intelligence contributes to activities traditionally associated with managerial influence and employee supervision. These activities may include scheduling, task allocation, recruitment, performance monitoring, employee development, and the production of recommendations used by human leaders. AI may function as a limited decision-support tool or exercise substantial influence over the final managerial outcome (Jarrahi et al., 2021; Parent-Rochelleau et al., 2024).

The expansion of AI in human resource management is commonly justified by its ability to process large datasets, recognize patterns, and apply standardized criteria. Organizations may use these capabilities to improve the speed and consistency of people-related decisions. AI can also help leaders identify development requirements, allocate work, or detect performance trends that might be overlooked through unaided human judgment (Tambe et al., 2019; Tursunbayeva et al., 2021).

However, AI-supported people management is not merely an administrative development. It alters how authority is exercised and how employees interpret leadership decisions. Algorithmic systems can perform functions associated with direction, evaluation, and control, while leaders remain formally responsible for managing employees. This creates a hybrid arrangement in which employees must interpret the authority of both the human leader and the technological system (Jarrahi et al., 2021; Tarafdar et al., 2023).

Research has emphasized the dual character of algorithmic management. AI may support employees by increasing access to information, improving coordination, and reducing selected forms of human inconsistency. The same technology may also restrict autonomy, intensify monitoring, and increase managerial control. Its consequences are therefore shaped by system design, organizational objectives, and the manner in which leaders apply algorithmic outputs (Meijerink & Bondarouk, 2023; Noponen et al., 2024).

The type of decision is also important. Employees may be relatively comfortable with AI-supported scheduling or administrative coordination but more cautious when AI influences recruitment, performance appraisal, promotion, or continued employment. High-stakes decisions attract greater attention because they affect professional identity, recognition, and career prospects. As a result, technical consistency alone is unlikely to ensure employee acceptance (Newman et al., 2020; Tambe et al., 2019).

AI-mediated leadership should consequently be treated as a sociotechnical process. Organizational outcomes do not arise from the algorithm alone. They emerge through interactions among system characteristics, organizational rules, managerial judgment, and employee interpretation. Leaders remain influential because they determine how algorithmic recommendations are reviewed, explained, and translated into action (Parker & Grote, 2022; Parent-Rochelleau & Parker, 2022).

2.2 Leader–Member Exchange Quality

Leader–Member Exchange Theory conceptualizes leadership as a relationship that develops through exchanges between a leader and an individual follower. High-quality relationships are characterized by mutual trust, respect, support, loyalty, and access to meaningful communication.

Lower-quality exchanges tend to remain formal and limited to the minimum requirements of the employment contract (Graen & Uhl-Bien, 1995).

LMX quality is relevant to AI-mediated leadership because algorithmic systems can modify the communication and decision-making processes through which leader–employee relationships develop. If employees receive automated schedules, performance assessments, or development recommendations, some interactions previously conducted directly with the leader may become technologically mediated.

This change may reduce relationship quality when employees perceive that leaders no longer understand their work or personal circumstances. Algorithmic indicators may represent measurable outputs while overlooking collaboration, creativity, emotional labor, and contextual constraints. A leader who applies these indicators without discussion may appear less supportive and less aware of the employee’s actual contribution.

Research on LMX emphasizes that employees’ perceptions of relationship quality are influenced by communication, recognition, support, and the leader’s willingness to use authority constructively (Gottfredson et al., 2020; Martin et al., 2023). AI may weaken these relational signals when it substitutes for direct interaction. It may also strengthen them when leaders use AI-generated information to recognize employee needs and improve the quality of individualized support.

The relational outcome therefore depends on how AI is integrated into leadership. A leader may treat an algorithmic recommendation as an unquestionable instruction or as one source of information requiring professional judgment. The first approach can reduce the leader’s perceived accountability, whereas the second can preserve the human role in interpretation and decision-making.

Algorithmic opacity may create an additional challenge. Employees may be uncertain about whether a decision represents the leader’s judgment or an automated output. When the division of responsibility is unclear, employees may not know who can explain or reconsider the decision. This ambiguity can weaken trust in both the leader and the system (Rahman, 2021).

In contrast, high-quality LMX may help employees manage technological uncertainty. Employees with supportive leaders may feel more confident that algorithmic recommendations will be reviewed and that individual circumstances will be considered. The leader can therefore function as a relational safeguard between the employee and the system.

2.3 Fairness in AI-Supported Leadership Decisions

Fairness is a central consideration in employee evaluations of AI-supported management. Employees assess whether outcomes are appropriate, whether procedures are consistent, and whether they are treated respectfully during the decision-making process. These evaluations involve both distributive justice, which concerns the fairness of outcomes, and procedural justice, which concerns the fairness of the methods used to produce them (Kinchin, 2024; Newman et al., 2020).

AI is sometimes presented as a method of reducing human bias because algorithms can apply standardized criteria. Nevertheless, algorithmic consistency does not automatically create fairness. AI systems depend on training data, selection criteria, and organizational objectives. If these elements reflect incomplete information or historical inequalities, the system may reproduce or amplify unfair patterns (Bujold et al., 2024; Delecraz et al., 2022).

Newman et al. (2020) describe algorithmic reductionism as a problem that occurs when complex human qualities are translated into simplified measurable categories. In human resource decisions, eliminating selected demographic information may appear impartial but can also produce perceptions of procedural unfairness if the system fails to recognize relevant personal and contextual information.

Perceived fairness is closely connected to employee voice. Employees are more likely to regard a process as legitimate when they can present relevant information, correct errors, and request reconsideration. Kinchin (2024) argues that algorithmic justice often concentrates on distributive fairness while insufficiently addressing procedural voice. This gap is particularly important in employment because workers may be evaluated by systems they cannot meaningfully question.

Fairness also influences how employees evaluate their leaders. A leader who critically examines an AI-generated recommendation may demonstrate responsibility and concern. Conversely, a leader who applies the recommendation mechanically may appear unwilling to exercise judgment. Employee perceptions of algorithmic fairness can therefore extend to judgments about the fairness and trustworthiness of human leadership.

Recent research on algorithmic recruitment indicates that transparency and system presentation can shape perceived algorithmic fairness (Ochmann et al., 2024). However, transparency alone does not guarantee fairness. Providing information about an unfair procedure may make the procedure more understandable without making it more equitable. Fair implementation also requires appropriate data, relevant criteria, human review, and access to correction.

In this study, fairness serves as an interpretive principle rather than an independently tested variable. The questionnaire did not contain a separate validated fairness scale. Accordingly, the study does not claim that fairness statistically mediates or moderates the relationship between AI-mediated leadership and LMX quality.

2.4 Transparency and Explainability

Transparency concerns the extent to which employees receive meaningful information about the use of AI in organizational decisions. At a minimum, employees should know that an AI system is involved, understand its general purpose, and be informed about the role retained by human decision-makers (Felzmann et al., 2020; Jarrahi et al., 2021).

Technical disclosure and meaningful transparency are not identical. Providing complex mathematical information may satisfy formal disclosure requirements without helping employees understand a decision. Effective transparency should be adapted to the knowledge and needs of

the affected employee. It should explain which information was considered, how the system influenced the process, and who is accountable for the outcome.

Explainability becomes especially important when AI influences high-stakes employment decisions. Employees may require only a basic explanation for routine scheduling support, while performance, promotion, or recruitment decisions require more detailed justification. Transparency should therefore be proportionate to the significance of the decision.

Opaque algorithmic evaluations can create what Rahman (2021) describes as an “invisible cage.” Employees may attempt to adapt their behavior to algorithmic expectations while remaining uncertain about how the system evaluates them. This uncertainty can reduce autonomy and encourage employees to focus on measurable indicators rather than the broader quality of their work.

Research suggests that transparency in algorithmic performance management can support employee understanding and proactive behavior. Cai and Wang (2024) found that transparency was positively related to proactive work behavior through employees’ motivation to improve performance. This evidence indicates that transparency may help employees interpret algorithmic feedback as usable developmental information rather than unexplained control.

Nevertheless, the effect of transparency depends on the quality of the disclosed information and the availability of human dialogue. Information that cannot be questioned may not provide meaningful employee voice. Transparent leadership therefore involves both explanation and the willingness to engage with employee concerns.

Transparency can also affect leader–member relationships. When leaders clearly describe how AI informed a decision and acknowledge the limitations of the system, they may reinforce perceptions of honesty and accountability. When leaders hide technological involvement or use technical complexity to avoid discussion, trust may decline.

As with fairness, transparency was not measured as an independent construct in the present study. It is used to interpret how responsible AI implementation may support relational quality, but no direct statistical effect of transparency is claimed.

2.5 Social Exchange Quality in AI-Mediated Organizations

Social Exchange Theory proposes that relationships develop through reciprocal exchanges of valued resources and support. Employees contribute time, effort, knowledge, and cooperation while expecting recognition, fair treatment, and organizational support in return (Blau, 1964).

Perceived social exchange quality reflects employees’ judgments about whether their organization values their contributions and cares about their well-being. These judgments are important because employees often respond to favorable organizational treatment through commitment and constructive behavior. Perceived organizational support is consistently associated with employee well-being and positive workplace outcomes (Caesens et al., 2020; Kurtessis et al., 2017).

AI-supported people management can become a signal of organizational intentions. A system introduced to improve development opportunities and reduce arbitrary decision-making may communicate investment in employees. A system used primarily for surveillance, work intensification, or cost reduction may communicate that organizational control is valued more highly than employee well-being.

The duality of algorithmic management is therefore also visible in social exchange relationships. Algorithms can create value for employees by improving access to information and reducing administrative uncertainty. They can simultaneously transfer risk and control toward employees by increasing monitoring and limiting discretion (Meijerink & Bondarouk, 2023).

Employee participation may influence how AI implementation is interpreted. Consultation, communication, and review mechanisms demonstrate that employees are recognized as organizational stakeholders. Introducing an algorithm without meaningful consultation may create an asymmetrical exchange in which the organization obtains increasingly detailed information about employees while providing limited information about how that data is used.

Privacy and data governance are also relevant. People management systems may rely on extensive employee data, including performance, attendance, communication, and behavioral information. Responsible AI implementation requires organizations to specify legitimate purposes, limit unnecessary data collection, and protect employees from inappropriate uses. Ethical and fair-by-design approaches can strengthen the legitimacy of AI-enabled human resource practices (Bujold et al., 2024; Delecraz et al., 2022).

Social exchange quality differs conceptually from LMX quality. LMX focuses on the relationship between an employee and an immediate leader, whereas social exchange quality reflects the employee's broader relationship with the organization. AI-mediated practices can influence both because the leader represents organizational policies while also maintaining a distinct interpersonal relationship with the employee.

2.6 Connecting AI-Mediated Leadership, LMX, Fairness, Transparency, and Social Exchange

The reviewed literature indicates that AI-mediated leadership can shape relational outcomes through both managerial behavior and organizational implementation. Employees evaluate whether AI-supported decisions preserve human accountability, whether processes are understandable, and whether the organization continues to recognize them as valued participants.

AI-mediated practices may support LMX quality when leaders use technological outputs to improve communication and individualized support. They may weaken LMX when leaders use algorithms to distance themselves from responsibility or avoid meaningful interaction. Likewise, AI may support social exchange quality when its implementation communicates fairness, investment, and organizational care, but weaken it when employees experience opacity, surveillance, or limited voice.

Fairness and transparency provide important conceptual explanations for these differences. Fair procedures, meaningful explanations, and accessible review processes can strengthen legitimacy. Nevertheless, the existence of technical fairness metrics or formal disclosure does not automatically create positive relational outcomes. Employees also require respect, voice, and accountable human engagement (Kinchin, 2024; Ochmann et al., 2024).

The literature therefore supports examining two direct empirical relationships: the relationship between AI-mediated leadership practices and LMX quality, and the relationship between AI-mediated leadership practices and perceived social exchange quality. The next section uses Leader–Member Exchange Theory and Social Exchange Theory to formalize these relationships and develop the hypotheses.

3. Theoretical Foundation and Research Methodology

3.1 Theoretical Foundation

This study integrates Leader–Member Exchange Theory and Social Exchange Theory to explain how AI-mediated leadership practices relate to employees’ relationships with their immediate leaders and organizations.

Leader–Member Exchange Theory explains leadership as a dyadic relationship that develops through repeated exchanges between a leader and an individual employee. High-quality relationships are characterized by trust, respect, communication, and reciprocal support, whereas lower-quality relationships tend to remain formal and contractually limited (Graen & Uhl-Bien, 1995).

The theory is applicable to AI-mediated leadership because algorithmic systems can change how leaders communicate, evaluate performance, allocate work, and provide developmental support. AI may strengthen leader–member exchange when it helps leaders make informed and consistent decisions. It may weaken the relationship when employees perceive that leaders have replaced personal judgment with automated recommendations or withdrawn from responsibility for consequential decisions (Jarrahi et al., 2021; Rahman, 2021).

Social Exchange Theory explains organizational relationships through reciprocity. Employees contribute effort and knowledge while evaluating whether the organization values their contributions and supports their well-being (Blau, 1964). AI-mediated practices can become signals of organizational intentions. Supportive and responsibly governed applications may communicate investment in employees, whereas opaque monitoring and unreviewable decisions may suggest that control and efficiency are being prioritized over employee welfare.

Fairness and transparency provide an interpretive context for these theoretical relationships. Fairness concerns the perceived appropriateness of decision procedures and outcomes, while transparency concerns whether employees receive understandable information about AI involvement. These principles may help explain why employees evaluate some AI-supported practices more favorably than others (Newman et al., 2020; Ochmann et al., 2024).

However, fairness and transparency were not measured using independent scales in the present study. They are therefore used only to interpret the findings and are not treated as predictors, mediators, or moderators in the statistical model.

Based on the integrated theoretical framework, the study proposes the following hypotheses:

H1: AI-mediated leadership practices are positively and significantly related to leader–member exchange quality.

H2: AI-mediated leadership practices are positively and significantly related to perceived social exchange quality.

3.2 Research Design

The study employed a quantitative, cross-sectional survey design. This design was appropriate because the research sought to measure employees' perceptions and examine statistical relationships among AI-mediated leadership practices, leader–member exchange quality, and perceived social exchange quality.

Data were collected at a single point in time without manipulating the study variables. Consequently, the findings represent associations and predictive relationships rather than evidence of causality (Creswell & Creswell, 2022; Siedlecki, 2020).

3.3 Population and Sample

The target population consisted of full-time employees working in organizations with different levels of exposure to AI-supported people management. Relevant AI applications included employee scheduling, work assignment, recruitment, performance monitoring, and training and development recommendations.

A total of 75 questionnaires were distributed electronically. Fifty-four usable responses were retained, producing a usable response rate of 72.0%. The respondents represented different age groups, educational levels, lengths of employment, and organizational functions, including information technology, operations, human resources, finance, and sales and marketing.

Of the 54 respondents, 38 employees (70.4%) confirmed that their organizations used AI in people management. Nine respondents (16.7%) reported that their organizations did not use such systems, while seven (13.0%) were uncertain.

These groups were retained because the study measured variation in employees' perceptions of AI-mediated leadership practices. Nevertheless, including respondents who reported no AI implementation or uncertainty is a limitation that should be considered when interpreting the findings.

3.4 Research Instrument

Data were collected through a structured electronic questionnaire. The instrument contained demographic questions and three multi-item scales corresponding to the study variables. All construct items were evaluated using a five-point Likert scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*).

3.4.1 AI-Mediated Leadership Practices

AI-mediated leadership practices were measured using four items assessing the reported use of AI in:

1. Training and development recommendations.
2. Employee scheduling and work assignments.
3. Recruitment and selection.
4. Productivity and performance monitoring.

Higher composite scores indicated greater perceived involvement of AI in leadership and people management activities.

3.4.2 Leader–Member Exchange Quality

Leader–member exchange quality was measured using four items adapted from the LMX literature. The items evaluated employees’ perceptions of leader understanding, support, communication, trust, and overall relationship quality.

Higher composite scores represented stronger employee relationships with immediate leaders. LMX-based measures are widely used to assess the quality of leader–follower relationships, although researchers have also emphasized the need for conceptual clarity when adapting these instruments (Gottfredson et al., 2020).

3.4.3 Perceived Social Exchange Quality

Perceived social exchange quality was measured using four items assessing whether employees:

- Felt valued as individuals.
- Considered their interactions with leaders meaningful and authentic.
- Believed their contributions were recognized.
- Felt that the organization treated employees as partners rather than resources.

Higher scores indicated more favorable perceptions of recognition, reciprocity, and organizational support.

3.5 Data Collection and Ethical Considerations

The questionnaire was distributed electronically to employees from different professional and organizational settings. Electronic administration allowed standardized data collection and enabled respondents to complete the questionnaire at a convenient time.

Participants received information regarding the purpose of the research before completing the survey. Participation was voluntary, and respondents were informed that they could discontinue their participation. No personally identifying information was requested, and the responses were handled confidentially.

Completed questionnaires were screened before analysis. Submissions containing substantial missing data or evident response-quality problems were excluded. The final dataset consisted of 54 usable responses.

3.6 Validity and Reliability

Content validity was supported by grounding the questionnaire items in the literature on AI-mediated people management, leader–member exchange, and perceived organizational support. The instrument was reviewed for clarity, relevance, and consistency with the study constructs.

A preliminary pilot assessment was used to identify unclear wording and improve item comprehension before the main distribution. Internal consistency was subsequently evaluated using Cronbach's alpha.

The reliability coefficients were:

- AI-mediated leadership practices: ($\alpha=.731$)
- Leader–member exchange quality: ($\alpha=.763$)
- Perceived social exchange quality: ($\alpha=.718$)

All three coefficients exceeded the commonly applied .70 threshold and indicated acceptable internal consistency for the study scales (Hair et al., 2019; Taber, 2018).

3.7 Data Analysis

Data analysis was conducted in four stages. First, frequencies and percentages were calculated to describe the participants and their reported organizational exposure to AI. Second, means and standard deviations were computed for individual items and composite variables.

Third, Pearson correlation analysis was conducted to examine the direction and strength of the relationships among AI-mediated leadership practices, leader–member exchange quality, and perceived social exchange quality.

Fourth, two simple linear regression models were estimated. The first model tested whether AI-mediated leadership practices predicted leader–member exchange quality. The second tested whether AI-mediated leadership practices predicted perceived social exchange quality.

Statistical significance was evaluated at the .05 level. The coefficient of determination (R^2) was used to identify the proportion of variance explained by each model, and standardized beta coefficients were used to assess the strength of the predictor.

Because the data were cross-sectional and self-reported, regression coefficients were interpreted as predictive associations rather than causal effects. No mediation or moderation analyses were conducted for fairness or transparency because these principles were not independently measured.

4. Empirical Findings

4.1 Data Profile and Analytical Focus

The empirical analysis focused exclusively on three constructs: AI-mediated leadership practices, leader–member exchange quality, and perceived social exchange quality. The final dataset included 54 usable responses.

Rather than repeating the complete demographic profile reported in the broader study, this article concentrates on the respondents' reported exposure to AI-supported people management and their evaluations of relational quality. Among the respondents, 38 employees (70.4%) confirmed that their organizations used AI in people management, nine (16.7%) reported no use, and seven (13.0%) were uncertain.

The variation in reported exposure was reflected in the AI-mediated leadership practice scores. This variation allowed the analysis to examine whether stronger perceptions of AI involvement were statistically associated with employees' relationships with leaders and organizations.

4.2 Pattern of AI Involvement in People Management

The four AI-mediated leadership items showed that AI involvement was not equally visible across people management functions. Table 1 presents the item-level results.

Table

1

Reported Applications of AI in People Management

AI-Supported Practice	Mean	SD	Agreement (%)
Scheduling and work assignments	3.72	0.969	68.5
Training and development recommendations	3.46	1.031	57.4
Productivity and performance monitoring	3.33	1.122	53.7
Recruitment and selection	3.28	1.092	48.2

Note. Agreement includes “agree” and “strongly agree.” (N=54).

Scheduling and work assignment represented the most visible AI application ((M=3.72)). AI involvement was less strongly reported in recruitment and selection ((M=3.28)). Performance monitoring produced the greatest response variability ((SD=1.122)), indicating considerable differences in employee exposure to AI-supported evaluation.

The pattern suggests that AI was more established in operational coordination than in high-stakes employment decisions. Nevertheless, the results confirm that AI had entered several activities through which leaders influence employees' daily work and career experiences.

4.3 Relational Quality Indicators

Leader–member exchange quality received generally favorable evaluations. Employees reported strong working relationships with their immediate leaders and indicated that leaders understood their work-related needs.

Table

2

Leader–Member Exchange Quality Indicators

Relational Indicator	Mean	SD	Agreement (%)
Strong relationship with immediate leader	4.15	0.832	85.1
Leader understands work problems and needs	4.00	0.881	79.6
Leader recognizes potential and supports development	3.80	0.973	70.4
Leader provides personalized feedback and guidance	3.78	0.997	70.4

Note. Agreement includes “agree” and “strongly agree.” (N=54).

The two highest-rated items concerned general relationship strength and leader understanding. Developmental investment and personalized guidance received slightly lower, although still favorable, evaluations. This difference indicates that employees assessed their overall relationships positively while expressing somewhat more variation regarding individualized leader involvement.

Perceived social exchange quality was also generally favorable, although the results varied across its relational components.

Table

3

Perceived Social Exchange Quality Indicators

Social Exchange Indicator	Mean	SD	Agreement (%)
Feeling valued as an individual employee	3.96	0.882	77.8
Meaningful and authentic leader interactions	3.85	0.921	72.2
Recognition and appreciation of contributions	3.70	0.998	66.7
Treatment as a partner rather than a resource	3.48	1.064	55.6

Note. Agreement includes “agree” and “strongly agree.” (N=54).

Feeling valued as an individual received the strongest evaluation. Treatment as a partner rather than merely as an organizational resource received the lowest mean and the greatest variability.

This distinction is relevant to AI-mediated management because employees may feel personally valued while remaining less certain about whether organizational systems treat employees as active partners.

4.4 Composite Statistics and Measurement Reliability

Composite scores were calculated for the three variables after confirming the direction of the questionnaire items.

Table 4
Composite Statistics and Internal Consistency

Variable	Items	Mean	SD	Cronbach's α
AI-Mediated Leadership Practices	4	3.45	0.821	.731
Leader–Member Exchange Quality	4	3.93	0.746	.763
Perceived Social Exchange Quality	4	3.75	0.832	.718

Note. (N=54).

The three reliability coefficients exceeded .70, indicating acceptable internal consistency. Leader–member exchange quality had the highest composite mean and reliability coefficient. AI-mediated leadership practices produced the lowest composite mean and the greatest variation, reflecting differences in organizational implementation.

4.5 Relationships Among the Study Variables

Pearson correlation analysis was used to examine the bivariate relationships among the three constructs.

Table 5
Correlations Among AI-Mediated Leadership and Relational Outcomes

Variable	1	2	3
1. AI-Mediated Leadership Practices	1		
2. Leader–Member Exchange Quality	.512**	1	
3. Perceived Social Exchange Quality	.478**	.621**	1

Note. (N=54). *($p < .01$), two-tailed.

AI-mediated leadership practices were positively associated with leader–member exchange quality (($r = .512$, $p < .001$)). They were also positively associated with perceived social exchange quality (($r = .478$, $p < .001$)).

Leader–member exchange quality and perceived social exchange quality were strongly related (($r=.621$, $p<.001$)). This association was expected because both variables represent relational experiences. However, the coefficient remained below the conventional .80 threshold for serious multicollinearity, supporting their treatment as related but distinguishable constructs.

4.6 Predictive Models

Two simple regression models were estimated to test the study hypotheses. The results are presented together in Table 6 to facilitate comparison.

Table **6**
Comparison of the Relational Regression Models

Model	Outcome Variable	B	SE	β	(R^2)	Adjusted (R^2)	F	p
1	Leader–Member Exchange Quality	.523	.121	.512	.262	.247	18.693	<.001
2	Perceived Social Exchange Quality	.496	.134	.478	.229	.213	14.506	<.001

Note. Predictor in both models: AI-Mediated Leadership Practices. (N=54).

4.6.1 Model 1: Leader–Member Exchange Quality

The first regression model was statistically significant, ($F(1,52)=18.693$, $p<.001$). AI-mediated leadership practices explained 26.2% of the variance in leader–member exchange quality.

The regression coefficient was positive and statistically significant (($B=.523$, $\beta=.512$, $t=4.324$, $p<.001$)). A one-unit increase in the AI-mediated leadership practices score was associated with an estimated .523-unit increase in the LMX quality score.

The evidence therefore supported **H1**.

4.6.2 Model 2: Perceived Social Exchange Quality

The second model was also statistically significant, ($F(1,52)=14.506$, $p<.001$). AI-mediated leadership practices explained 22.9% of the variance in perceived social exchange quality.

The regression coefficient was positive and statistically significant (($B=.496$, $\beta=.478$, $t=3.808$, $p<.001$)). A one-unit increase in the AI-mediated leadership practices score was associated with an estimated .496-unit increase in perceived social exchange quality.

The evidence therefore supported **H2**.

4.7 Findings Across the Two Models

The findings reveal three principal patterns. First, employees reported stronger relational evaluations than evaluations of AI involvement. This suggests that the human relationship with leadership remained comparatively favorable despite uneven AI implementation.

Second, AI-mediated leadership practices were significantly associated with both relational outcomes. The association was somewhat stronger for LMX quality than for perceived social exchange quality. AI-supported practices may therefore be more closely connected to employees' evaluations of immediate leaders than to their broader organizational exchange.

Third, the two regression models explained meaningful but incomplete proportions of the relational outcomes. AI-mediated leadership accounted for approximately one-quarter of the variance in each outcome. Most of the variance remained unexplained, indicating that relationship quality is also shaped by factors not included in the models.

4.8 Hypothesis Decisions

Table

7

Summary of Hypothesis Testing

Hypothesis Statement		Decision
H1	AI-mediated leadership practices are positively related to leader–member exchange quality.	Supported
H2	AI-mediated leadership practices are positively related to perceived social exchange quality.	Supported

The findings support the proposed associations but do not establish causal effects. They also do not test whether fairness or transparency separately explains the relationships because these principles were not measured as independent variables.

5. Discussion, Contributions, and Implications

5.1 Interpretation of the Findings

This study examined whether employees' perceptions of AI-mediated leadership practices were associated with two relational outcomes: leader–member exchange quality and perceived social exchange quality. Both hypotheses were supported.

The findings do not suggest that the mere presence of AI improves workplace relationships. Rather, they indicate that differences in how employees experience AI-supported management are associated with differences in relational quality. This distinction is important because AI involvement varied considerably across the participating organizations and people management functions.

AI was most visible in scheduling and work assignments, whereas its reported involvement was lower in recruitment and selection. This pattern may reflect a gradual implementation process in

which organizations initially use AI for operational coordination before extending it to more consequential employment decisions. Employees may also be more aware of AI in daily scheduling than in less visible recruitment or selection procedures.

Despite the presence of AI-supported management, respondents generally evaluated their relationships with immediate leaders favorably. The strongest LMX indicators were the overall strength of the working relationship and the leader's understanding of employee needs. Personalized guidance and developmental support received slightly lower evaluations. This difference suggests that employees may maintain positive general relationships while experiencing less individualized attention in management activities that increasingly rely on technological support.

Perceived social exchange quality followed a similar pattern. Most employees felt valued as individuals and considered their interactions with leaders meaningful. However, fewer respondents believed that their organizations treated employees as partners rather than resources. This result highlights a possible distinction between interpersonal support and organizational system design. An employee may trust an immediate leader while questioning whether the organization's technological practices preserve meaningful participation and recognition.

5.2 AI-Mediated Leadership and LMX Quality

AI-mediated leadership practices explained 26.2% of the variance in LMX quality. The positive coefficient indicates that employees reporting stronger AI involvement also tended to report more favorable relationships with their leaders.

This finding challenges the assumption that technological mediation necessarily dehumanizes leadership. AI can provide leaders with information that supports coordination, identifies employee needs, and improves the consistency of selected decisions. Used in this way, technology may enhance a leader's capacity to provide timely and relevant support.

At the same time, the finding should be interpreted cautiously. The cross-sectional data do not establish that AI involvement caused improvements in LMX quality. Organizations with stronger leadership relationships may also be more capable of introducing AI effectively. Employees who trust their leaders may interpret technological changes more favorably than employees in lower-quality relationships.

The result is consistent with LMX Theory because employees evaluate leadership through repeated relational experiences rather than through technology alone (Graen & Uhl-Bien, 1995). AI becomes relevant to LMX when it changes the quality of communication, support, recognition, and leader accountability.

The leader's role remains decisive. AI-generated information can be used to initiate an individualized conversation or to avoid one. It can help a leader identify an employee's developmental needs or reduce the employee to a numerical profile. The relational outcome depends on how technological information is translated into leader behavior.

Research on algorithmic management similarly indicates that human–algorithm interaction can generate both supportive and controlling outcomes (Jarrahi et al., 2021; Meijerink & Bondarouk, 2023). The present findings reinforce this duality by showing that AI-supported leadership can coexist with favorable LMX relationships while still leaving room for concern about personalized guidance.

5.3 AI-Mediated Leadership and Social Exchange Quality

AI-mediated leadership practices explained 22.9% of the variance in perceived social exchange quality. Employees who reported stronger AI-mediated leadership practices also tended to evaluate their reciprocal relationship with the organization more positively.

Social Exchange Theory helps explain this association. Employees interpret organizational practices as evidence of how the organization values them and intends to manage the employment relationship (Blau, 1964). AI-supported processes may communicate organizational investment when they improve access to development, reduce arbitrary decisions, or make work allocation more consistent.

However, technological implementation can communicate a less favorable message when employees experience increased surveillance, weak participation, or limited access to human review. Algorithmic systems may create an asymmetry in which organizations gain extensive information about employees while employees receive limited information about how they are evaluated.

The lower mean for treatment as a partner rather than a resource is particularly relevant. Algorithmic management depends on converting employee behavior into measurable data. While this process may support organizational decision-making, it can also make employees feel that their value is being represented primarily through productivity indicators.

Perceived organizational support requires more than operational efficiency. Employees also evaluate whether the organization recognizes their contributions, considers their well-being, and responds when a system produces an inappropriate outcome (Kurtessis et al., 2017). AI implementation should therefore be understood as part of the social exchange relationship rather than as a separate technical activity.

5.4 The Interpretive Roles of Fairness and Transparency

Fairness and transparency were not statistically tested as separate variables, but the literature suggests that they provide an important context for interpreting the findings.

Fairness is relevant because employees evaluate both the outcomes and procedures associated with AI-supported decisions. Consistency may improve perceptions of fairness, but standardized treatment is insufficient if the underlying information is incomplete or the decision criteria are inappropriate. Algorithmic reductionism can produce concerns when complex employee contributions are represented through narrow indicators (Newman et al., 2020).

Transparency can help employees understand when AI is involved, what purpose it serves, and how much discretion remains with the human leader. Research indicates that transparency may support employee acceptance and constructive behavioral responses when it provides usable information (Cai & Wang, 2024; Ochmann et al., 2024).

Nevertheless, transparency should not be treated as a universal solution. Explaining an inappropriate process does not make it fair. Information also has limited value when employees cannot correct errors or challenge consequential outcomes. Procedural voice is therefore an important complement to transparency (Kinchin, 2024).

Fairness and transparency should be examined directly in future studies using validated measures. Such research could determine whether they explain the relationship between AI-mediated leadership and relational outcomes or whether their influence depends on decision type, AI literacy, and perceived human oversight.

5.5 Theoretical Contributions

This study makes several theoretical contributions.

First, it extends LMX Theory into AI-mediated leadership contexts. Traditional LMX research focuses primarily on interpersonal exchanges. The current study demonstrates that technological systems may become part of the environment through which employees interpret leader support, judgment, and accountability.

Second, the study distinguishes between two relational levels. LMX quality captures the employee's relationship with an immediate leader, whereas perceived social exchange quality captures the broader relationship with the organization. The findings show that AI-mediated leadership is associated with both, although the relationship was somewhat stronger for LMX quality.

Third, the study contributes to the duality perspective on algorithmic management. The results do not support a technologically deterministic conclusion that AI always strengthens or weakens relationships. Instead, they indicate that AI can coexist with favorable relational outcomes while also generating concern about recognition, partnership, and individualized attention.

Fourth, the study clarifies the conceptual status of fairness and transparency. Rather than presenting them as tested mechanisms, it uses them as interpretive principles that should be measured directly in subsequent research. This distinction prevents theoretical discussion from exceeding the empirical evidence.

5.6 Practical Implications

Organizations introducing AI into people management should address its relational consequences alongside its technical performance.

5.6.1 Preserve Human Accountability

Leaders should remain responsible for decisions informed by AI. Employees should know who reviewed the recommendation and who has authority to reconsider it. Leaders should avoid presenting algorithms as independent decision-makers that cannot be questioned.

5.6.2 Match Oversight to Decision Risk

The level of human oversight should correspond with the consequences of the decision. Routine scheduling may require limited review, whereas performance evaluation, promotion, recruitment, and compensation decisions require more substantial human judgment and explanation.

5.6.3 Provide Meaningful Explanations

Organizations should inform employees when AI participates in a decision and provide an understandable explanation of its role. Technical information should be translated into language relevant to the affected employee.

5.6.4 Protect Employee Voice

Employees should have opportunities to correct inaccurate information, provide contextual evidence, and request human reconsideration. A clear review process can strengthen procedural legitimacy even when the original outcome remains unchanged.

5.6.5 Strengthen Relational Leadership

AI should be used to support, not replace, personalized feedback and developmental conversations. Leadership development programs should help managers interpret AI outputs critically, identify possible limitations, and communicate decisions with empathy.

5.6.6 Monitor Relational Outcomes

Organizations should assess trust, perceived support, employee voice, and leader–employee relationship quality after introducing AI-supported systems. Technical accuracy alone cannot indicate whether implementation is relationally sustainable.

5.7 Limitations

Several limitations should be considered.

First, the final sample contained only 54 respondents. The findings should therefore be treated as exploratory and should not be generalized broadly to all AI-integrated organizations.

Second, the study used cross-sectional data. The analysis identifies significant associations but cannot establish whether AI-mediated leadership caused changes in relational quality.

Third, all variables were measured through employee self-reports in one questionnaire. Common method variance may have increased some of the observed relationships.

Fourth, the AI-mediated leadership measure captured reported involvement in several management functions but did not distinguish clearly among advisory, partially automated, and fully automated decision processes.

Fifth, 16 participants either reported no organizational AI use or were uncertain about its implementation. Their inclusion provided variation in perceived exposure but may have reduced the precision of conclusions about employees with confirmed direct experience.

Sixth, fairness and transparency were not measured using independent scales. Their effects cannot therefore be inferred from the regression results, despite their relevance to the interpretation of AI-mediated leadership.

Finally, the same dataset supported the broader dissertation and related analyses. Any publication using this dataset should disclose its shared origin, distinguish its research question and variables, and avoid presenting overlapping findings as independent evidence.

5.8 Directions for Future Research

Future research should use larger samples drawn from multiple organizations and sectors. Samples should distinguish employees according to confirmed AI exposure, the type of people management decision, and the level of automation.

Longitudinal studies could determine whether relational responses change as employees gain experience with AI systems. Initial uncertainty may decline as systems become familiar, or negative responses may increase if employees experience repeated opaque decisions.

Future studies should directly measure perceived algorithmic fairness, transparency, explainability, employee voice, human oversight, and AI literacy. These variables could be tested as mediators or moderators only when the research design and measurements support such analyses.

Multi-source studies would further strengthen the evidence. Employee perceptions could be combined with leader assessments, organizational policies, system documentation, and records of AI-supported decisions.

Experimental designs could compare employee responses across different decision conditions, such as:

- A decision made entirely by a human leader.
- An AI recommendation approved by a human leader.
- A fully automated decision.
- An AI-supported decision accompanied by explanation and appeal.
- An opaque AI-supported decision without review.

Such comparisons would provide stronger evidence about how fairness, transparency, and human accountability affect relational quality.

6. Conclusion

AI-mediated leadership is changing the relational context of people management. As algorithms become involved in scheduling, employee development, recruitment, and performance monitoring, employees must evaluate not only the decisions of human leaders but also the technological processes influencing those decisions.

This study found that AI-mediated leadership practices were positively associated with leader–member exchange quality and perceived social exchange quality. AI-mediated leadership explained 26.2% of the variance in LMX quality and 22.9% of the variance in perceived social exchange quality. These findings demonstrate that AI involvement and positive workplace relationships are not inherently incompatible.

However, the results should not be interpreted as proof that increased automation improves leadership relationships. The findings are cross-sectional and reflect employee perceptions. They show that the quality of AI-mediated leadership is relationally consequential, not that technology itself creates trust or reciprocity.

The study also demonstrates the continuing importance of human leadership. Employees reported strong general relationships with their immediate leaders, while personalized guidance and treatment as organizational partners received comparatively lower evaluations. AI may improve coordination, but it cannot independently provide recognition, moral accountability, or meaningful interpersonal support.

Fairness and transparency offer important principles for responsible implementation. Employees require understandable explanations, appropriate human review, accurate information, and opportunities to be heard. Transparency without voice is incomplete, while consistency without contextual judgment may still be perceived as unfair.

The central conclusion is therefore that organizations should design AI-mediated leadership around relational accountability. AI should inform managerial judgment while leaders and organizations remain responsible for how decisions affect employees. Sustainable AI adoption depends on preserving trust, reciprocal support, employee voice, and the human relationship at the center of leadership.

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