

Integrating SERVQUAL and MOORA into Decision Support Systems for Employee Performance Evaluation: A Systematic Literature Review

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Abstract

Employee performance evaluation in service-oriented organizations requires assessment approaches that are objective, measurable, transparent and aligned with customer-perceived service quality. However, prior studies remain fragmented across service quality measurement, human resource analytics, decision support system design and multi-criteria decision-making methods. This study systematically reviews the integration of Service Quality (SERVQUAL) and Multi-Objective Optimization on the Basis of Ratio Analysis (MOORA) into Decision Support Systems (DSS) for employee performance evaluation. Following the PRISMA 2020 protocol, literature indexed in Scopus and Web of Science was identified, screened and synthesized through thematic and comparative analysis, while methodological quality was assessed using the Mixed Methods Appraisal Tool (MMAT). Sixty studies were included in the final qualitative synthesis. The review identified five major research streams: SERVQUAL measurement and adaptation, hybrid MCDM-based service evaluation, HR and people analytics, intelligent and explainable DSS and employee-oriented SERVQUAL applications. Findings show that SERVQUAL provides a basis for customer-oriented performance criteria, while MOORA offers transparent multi-criteria ranking across benefit and cost criteria. Nevertheless, direct empirical integration of SERVQUAL and MOORA for individual employee appraisal remains limited. The synthesis further highlights the need for defensible criterion-to-performance mapping, careful attribution of customer evaluations to employees and governance mechanisms addressing transparency, fairness, validation and employee review. The study proposes a SERVQUAL–MOORA conceptual framework for subsequent pilot testing and cross-sector validation.

Keywords: Decision Support Systems, Employee Performance Evaluation, Human Resource Analytics, MOORA, SERVQUAL.

Introduction

Employee performance evaluation has evolved from a purely administrative Human Resource (HR) function into a strategic mechanism linked to service quality and customer satisfaction. In service-oriented and project-based organizations, employee performance is assessed not only through managerial judgment but is also experienced directly by customers during service interactions (1, 2). Employee behavior therefore influences customer perceptions of reliability, responsiveness, assurance, empathy and overall service quality (3). This creates increasing demand for evaluation systems that connect employee-level performance with customer-oriented outcomes, service-quality improvement and operational effectiveness. Customer-centric management has strengthened the relevance of service quality theory in employee evaluation (4, 5). Service Quality (SERVQUAL) remains widely

adopted because it conceptualizes service quality through five core dimensions: tangibles, reliability, responsiveness, assurance and empathy (6–8). Although SERVQUAL is extensively applied to customer satisfaction across healthcare, hospitality, banking and education, its use for employee performance evaluation remains limited (9). Customer-perceived service quality also cannot automatically be attributed to an individual employee because outcomes may reflect team processes, organizational procedures, infrastructure, or other contextual factors. Employee-oriented application therefore requires an explicit and defensible mapping between SERVQUAL dimensions and indicators that are reasonably attributable to employee behavior and service delivery. Advances in Decision Support Systems (DSS) and Multi-Criteria Decision-Making (MCDM) have transformed organizational evaluation

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practices (10, 11). Modern DSS use analytical and computational approaches to improve transparency, consistency and objectivity in managerial decisions (12), while MCDM methods are relevant because employee appraisal involves multiple and potentially conflicting criteria (13, 14). Multi-Objective Optimization on the Basis of Ratio Analysis (MOORA) is promising because of its computational simplicity, normalization capability and ability to process benefit and cost criteria simultaneously (15, 16). MOORA has been applied in supplier selection, project prioritization, resource allocation and personnel evaluation (16). However, evidence from these different settings should primarily be treated as methodological support for the analytical capability of MOORA rather than as direct validation for customer-oriented employee appraisal.

Research integrating SERVQUAL and MOORA within employee performance evaluation nevertheless remains fragmented. Service-quality studies commonly operate separately from analytical decision-support mechanisms, whereas MCDM studies often emphasize ranking accuracy without sufficiently incorporating customer-oriented service dimensions (17). HR analytics, explainable artificial intelligence and intelligent DSS have introduced more adaptive and data-driven approaches, but these streams remain weakly connected (18, 19). Organizations therefore still face difficulties in creating appraisal systems that are simultaneously customer-oriented, analytically rigorous, transparent and managerially interpretable. Moreover, a ranking algorithm alone is not a complete DSS: a practical system must specify data sources, criterion weights, employee-customer attribution, evaluation frequency, managerial interpretation, validation procedures and mechanisms through which employees can review potentially inaccurate evaluations.

This fragmentation creates a theoretical and methodological gap. Few studies integrate service-quality dimensions, employee-level performance indicators, customer satisfaction outcomes and explainable ranking mechanisms within one evaluation architecture (20). Most research focuses on isolated components such as service-quality measurement, MCDM ranking, HR analytics, or AI-supported automation without showing how they can operate cohesively in

practical employee evaluation systems (21–23). Guidance is also limited regarding which SERVQUAL-related indicators should be treated as beneficial criteria and which operational indicators, such as waiting time, complaint frequency, service deficiencies, or errors, should be treated as non-beneficial criteria in a MOORA-based model.

This study addresses these gaps through a systematic literature review examining SERVQUAL and MOORA integration within DSS for employee performance evaluation. Following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) 2020 protocol, the review synthesizes literature on service quality, customer satisfaction, DSS, HR analytics and MCDM. It identifies major research trends, evaluates methodological developments, compares relevant analytical methods and examines how SERVQUAL dimensions can be operationalized within MOORA-based employee evaluation. The study also develops a conceptual framework combining service-quality dimensions, structured weighting, transparent ranking and customer-satisfaction validation. Because the evidence spans heterogeneous contexts and often covers only selected components of the proposed relationship, the review distinguishes evidence directly relevant to employee appraisal from supporting methodological and contextual evidence.

Accordingly, this systematic review is guided by the following research questions:

RQ1: What major theoretical and methodological research streams characterize the existing literature on SERVQUAL, employee performance evaluation, MCDM, HR analytics and decision support systems?

RQ2: How can SERVQUAL dimensions be defensibly translated into employee-relevant performance criteria, including the distinction between beneficial and non-beneficial indicators for MOORA-based evaluation?

RQ3: How have MOORA and related MCDM approaches been applied within personnel, service-quality and decision-support contexts and what evidence supports their transferability to employee performance evaluation?

RQ4: What data-attribution, governance, validation, fairness and implementation requirements are necessary for integrating SERVQUAL

and MOORA into a transparent employee performance evaluation DSS?

The contribution of this study is threefold. First, it clarifies the fragmented relationship among service quality theory, HR analytics, DSS and employee performance evaluation. Second, it critically examines the suitability and transferability of MOORA and related MCDM methods for customer-oriented employee appraisal. Third, it proposes a conceptual framework and future research agenda for developing intelligent, explainable and evidence-based employee evaluation systems. Evidence from non-employee applications is therefore used selectively to inform methodological design, criterion construction, DSS architecture and governance requirements rather than being treated as equivalent empirical evidence for individual employee appraisal. This distinction strengthens the conceptual validity of the proposed integration and identifies priorities for subsequent empirical testing.

Methodology

Research Design

This study adopts a Systematic Literature Review (SLR) approach guided by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) 2020 framework. PRISMA 2020 provides a standardized and transparent procedure for identifying, screening, evaluating and synthesizing scientific evidence systematically (24). The framework was selected because it is widely recognized in high-quality review studies and frequently applied in Scopus-indexed journals to ensure methodological rigor, transparency and reproducibility.

To strengthen methodological quality assessment, this review also applies the Mixed Methods Appraisal Tool (MMAT) 2018 (25). MMAT enables the evaluation of qualitative, quantitative, mixed-method and descriptive studies using criterion-level assessment rather than aggregate scoring (26). This approach is considered appropriate because the reviewed studies involve heterogeneous research designs across service

quality, Decision Support Systems (DSS), Human Resource (HR) analytics and Multi-Criteria Decision-Making (MCDM) domains.

The overall methodological procedure consisted of five stages: identification of relevant studies, screening and eligibility assessment, quality appraisal, data extraction and qualitative synthesis (27). The complete study selection procedure is presented in Figure 1 according to the PRISMA 2020 flow diagram. To maintain explicit alignment with the research questions stated in the Introduction, the review process was structured to:

- a) identify major theoretical and methodological research streams relevant to RQ1;
- b) extract and compare employee-relevant service-quality criteria and their potential benefit or cost orientation for RQ2;
- c) examine applications of MOORA and related MCDM methods and assess their degree of transferability to employee performance evaluation for RQ3; and
- d) synthesize evidence concerning data attribution, DSS functionality, governance, validation, fairness and implementation requirements for RQ4.

Data Sources and Search Strategy

The literature search was conducted using two major scientific databases, namely Scopus and Web of Science Core Collection, because both databases provide extensive coverage of peer-reviewed international publications with high indexing standards (28). To improve comprehensiveness and minimize publication bias, backward and forward citation tracking was also performed using relevant review studies and seminal articles as seed references. The search strategy was developed based on four conceptual domains central to this study: service quality, employee performance evaluation, MCDM methods and decision support systems (29). Boolean operators were used systematically to maximize search precision and retrieval relevance. The master Boolean search structure used in Scopus and Web of Science is presented in Table 1.

Table 1: Master Boolean Search Structure

Search Component	Keywords
Service Quality	"SERVQUAL", "service quality", "smart service quality", "electronic service quality", "e-SERVQUAL"
Employee Evaluation	"employee performance", "performance appraisal", "employee evaluation", "human resource analytics", "HR analytics", "people analytics", "workforce analytics"
MCDM Methods	"MOORA", "MCDM", "TOPSIS", "AHP", "ANP", "PROMETHEE", "ELECTRE", "VIKOR", "MULTIMOORA"
DSS and Analytics	"decision support system", "DSS", "intelligent evaluation", "customer satisfaction", "explainable artificial intelligence", "explainable AI"

The search process primarily focused on publications published between 2019 and 2025, while foundational studies were incorporated when necessary to maintain conceptual continuity and theoretical grounding. In Table 1, TOPSIS refers to Technique for Order Preference by Similarity to Ideal Solution, AHP refers to Analytic Hierarchy Process, ANP refers to Analytic Network Process, PROMETHEE refers to Preference Ranking Organization Method for Enrichment Evaluation, ELECTRE refers to Elimination and Choice Translating Reality, VIKOR is commonly translated into English as Multi-Criteria Optimization and Compromise Solution and AI refers to Artificial Intelligence.

Inclusion and Exclusion Criteria

To ensure consistency and topical relevance, predefined inclusion and exclusion criteria were established prior to the screening process (30). Studies were included if they met the following criteria: peer-reviewed journal articles indexed in Scopus or Web of Science, English-language publications, studies related to service quality, employee performance evaluation, DSS, HR analytics, or MCDM applications and empirical, conceptual, methodological, or review articles relevant to the research objectives (29). Conversely, conference papers, theses, editorials, viewpoints, duplicate records, non-English publications and studies unrelated to employee evaluation or service-quality contexts were

excluded to maintain methodological consistency and comparability (29).

To make eligibility decisions operational rather than solely topic-based, a study was considered eligible only when it contributed evidence to at least one of the four review questions. Studies addressing employee performance or employee-facing service behavior directly were retained as direct evidence. Studies addressing service-quality measurement, personnel-related MCDM, or DSS design without examining the complete SERVQUAL–MOORA–employee relationship were retained only when they provided a clearly transferable methodological component. Studies from unrelated application settings were not interpreted as equivalent empirical evidence for employee appraisal; instead, they were used only to inform method selection, criterion design, weighting, ranking, DSS functionality, or governance when the transfer was conceptually justified.

Studies were excluded at full-text assessment when the apparent keyword relevance was not supported by a substantive connection to employee evaluation, service-quality assessment, MCDM methodology, or DSS architecture. Studies were also excluded when their methodological description was insufficient to determine how the reported approach contributed to the research questions. The detailed inclusion and exclusion criteria are summarized in Table 2.

Table 2: Operational Inclusion and Exclusion Criteria

Dimension	Inclusion Criteria	Exclusion Criteria
Publication type	Peer-reviewed journal articles	Conference papers, theses, editorials, viewpoints
Indexing	Scopus or Web of Science	Non-indexed publications
Language	English	Non-English publications
Publication period	2019–2025, with selected foundational studies	Studies outside the period without clear foundational relevance
Conceptual relevance	Directly addresses employee performance/service behavior or	No substantive contribution to the research questions

	contributes a transferable SERVQUAL, MCDM, HR analytics, or DSS component	
Employee-appraisal relevance	Direct employee-level evidence or clearly transferable methodological evidence	Application setting with no defensible connection to employee evaluation
Accessibility	Full text available for eligibility assessment	Inaccessible full text
Duplication	Unique study record	Duplicate record or duplicate conceptual publication

Study Selection Process

The study selection process followed the PRISMA 2020 workflow consisting of identification, screening, eligibility assessment and inclusion stages (24). Initially, all records retrieved from Scopus and Web of Science were merged into a unified database. Duplicate records were subsequently removed, followed by title and abstract screening based on the predefined eligibility criteria (31). Full-text evaluation was then conducted for studies considered potentially relevant.

As illustrated in Figure 1, a total of 1,918 records were initially identified from Scopus ($n = 1,246$) and Web of Science ($n = 672$). After removing 438 duplicate records, 1,480 studies remained for title and abstract screening. During this stage, 1,116 records were excluded because they did not meet the research objectives. Subsequently, 364 reports

were considered for retrieval, of which 22 could not be accessed. The remaining 342 full-text articles underwent eligibility assessment, resulting in the exclusion of 282 studies due to off-topic scope, weak methodological fit, lack of focus on the employee-service interface, conference/book/non-indexed publication type and duplicate conceptual overlap. Ultimately, 60 studies satisfied all inclusion criteria and were included in the final qualitative synthesis.

During full-text assessment, eligibility was determined not only by the presence of relevant keywords but also by the study's functional contribution to the proposed SERVQUAL-MOORA-DSS relationship. This procedure prevented studies from unrelated application domains from being treated as direct evidence for employee performance evaluation merely because they applied SERVQUAL, MOORA, or another MCDM technique.

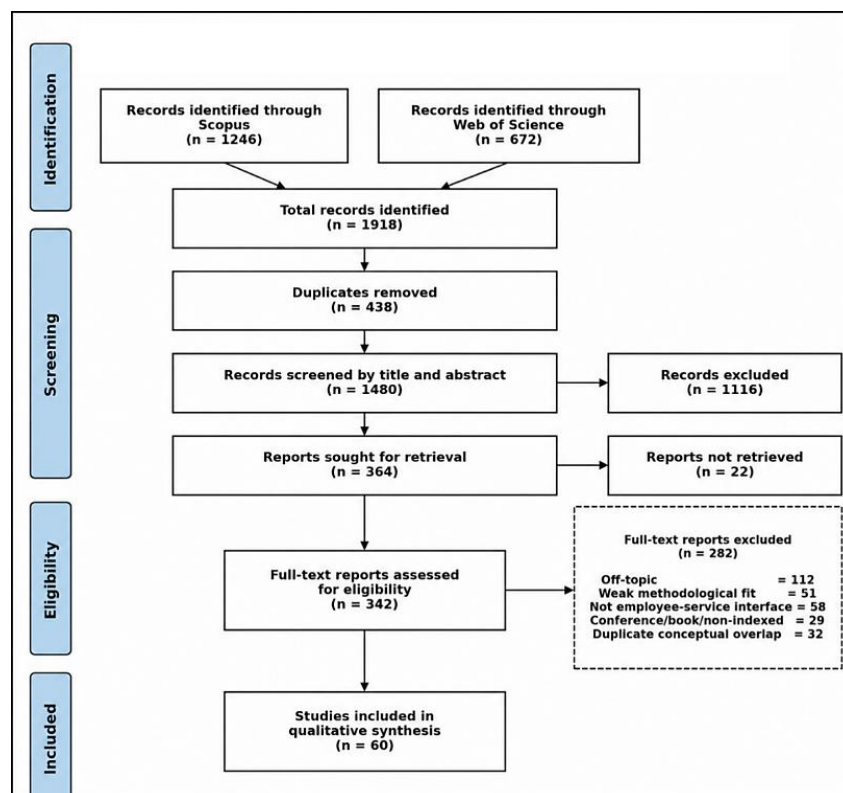


Figure 1: PRISMA 2020 Flow Diagram of Study Selection

Quality Appraisal and Evidence

Classification

Methodological quality assessment was conducted using MMAT 2018 at the criterion level rather than by assigning a single aggregate score (26). This approach aligns with MMAT recommendations emphasizing transparent reporting of methodological strengths and weaknesses across heterogeneous research designs. To complement MMAT evaluation, this study also applied a customized qualitative appraisal framework consisting of four dimensions: conceptual relevance, methodological transparency, data adequacy and practical transferability (32).

Based on these criteria, studies were classified into three categories: core studies, supporting studies and peripheral studies. This classification enabled the review to distinguish studies with direct conceptual relevance from studies that served primarily as contextual or supporting evidence.

For greater operational clarity, core studies were defined as studies directly addressing employee performance, employee-facing service behavior, personnel evaluation, or a closely aligned integration of service-quality and decision-support mechanisms. Supporting studies addressed one or more relevant components such as SERVQUAL measurement, personnel-related MCDM, MOORA implementation, HR analytics, or DSS design that could be transferred to employee evaluation with a defensible conceptual rationale. Peripheral studies contributed only contextual or methodological insights, such as general service-quality applications, explainability, weighting techniques, or governance principles and were not treated as direct empirical evidence of employee-appraisal effectiveness.

This evidence hierarchy was used throughout the synthesis to avoid equating methodological success in suppliers, transportation systems, service units, or other non-employee alternatives with validated effectiveness in individual employee performance appraisal.

The review also distinguished the maturity of decision-support implementations. A study was classified as an algorithmic ranking application when it primarily reported calculation and ranking procedures; as a spreadsheet or stand-alone analytical implementation when computations were performed without an integrated decision workflow; as a DSS prototype when the study

incorporated structured data input, analytical processing and decision-oriented output; and as an operational or integrated DSS when analytical models were embedded within broader data, managerial interpretation, validation, or governance processes. This distinction was applied because the use of a ranking algorithm alone was not considered sufficient evidence of a complete DSS.

Data Extraction and Synthesis

A structured data extraction procedure was employed to ensure systematic evidence organization across all included studies. Extracted information included bibliographic details, study type, organizational context, service quality model, DSS or MCDM method, evaluation criteria, outcome variables, data sources, key findings and research limitations (33).

Additional extraction fields were introduced to address the research questions and reviewer concerns. These included: the unit of analysis; whether the evidence concerned individual employees, teams, service units, or non-human alternatives; the degree of employee-appraisal relevance; SERVQUAL dimensions used; employee-attributable performance indicators; criterion orientation as benefit or cost where reported or conceptually identifiable; the source of evaluation data; weighting procedures; the type and maturity of DSS implementation; customer-to-employee attribution mechanisms; validation procedures; governance and fairness mechanisms; and reported opportunities for employee review or appeal.

The extracted studies were synthesized qualitatively using thematic and comparative analysis. The synthesis focused on identifying dominant theoretical perspectives, methodological trends, SERVQUAL applications in employee evaluation, comparative implementation of MCDM approaches, DSS integration patterns and emerging research gaps. Emphasis was placed on explainability, customer-oriented evaluation, analytical transparency and intelligent DSS implementation because these themes represent the central contribution of this review.

The thematic synthesis was organized in accordance with the four research questions. Evidence addressing RQ1 was used to identify dominant research streams; evidence for RQ2 was examined to determine how service-quality

constructs could be translated into employee-relevant criteria and whether indicators functioned as beneficial or non-beneficial measures; evidence for RQ3 was compared according to methodological relevance and transferability rather than treated as equivalent employee-appraisal evidence; and evidence for RQ4 was synthesized to identify attribution, governance, validation, fairness and implementation requirements for a complete employee evaluation DSS.

Reliability and Validity

To improve methodological reliability, the screening process was conducted through independent review and consensus-based disagreement resolution during the title/abstract and full-text evaluation stages. Inter-rater agreement was considered to strengthen transparency and reproducibility in the selection process (34). The same predefined eligibility rules and evidence-classification criteria were applied across screening, appraisal, extraction and synthesis to reduce inconsistency in the interpretation of partially relevant studies.

No inference from a non-employee application setting was treated as direct validation of

employee performance appraisal unless the original study explicitly examined employee- or personnel-level evaluation. Transferable evidence was therefore reported as methodological or contextual support rather than as empirical proof of the proposed integrated framework.

Overall, the methodological framework adopted in this study was designed to ensure rigor, transparency and conceptual comprehensiveness in examining the integration of SERVQUAL and MOORA within decision support systems for employee performance evaluation.

Results And Discussion

Literature Analysis and Thematic Synthesis

The systematic synthesis identified five dominant thematic clusters within the reviewed literature, reflecting the evolving convergence of service quality measurement, Decision Support Systems (DSS), Human Resource (HR) analytics and Multi-Criteria Decision-Making (MCDM). The thematic structure of the reviewed studies is summarized in Table 3.

Table 3: Literature Classification

Stream	Typical Unit of Analysis	Typical Method	Strength	Limitation
Classical and extended SERVQUAL	Customer or service setting	Survey, Structural Equation Modeling (SEM), gap analysis	Strong dimensional foundation	Employee-level use remains underdeveloped
Hybrid MCDM service evaluation	Service providers or service units	MOORA, TOPSIS, BWM, fuzzy hybrids	Strong multicriteria ranking capability	Often not linked to HR appraisal
HR analytics and people analytics	HR function, organization, or employee data	SLR, bibliometric analysis, predictive analytics	Strategic and organizational relevance	Service-quality constructs are often absent
Intelligent service-quality DSS	Calls, reviews and online interactions	XAI, deep learning, NLP, sentiment analysis	Dynamic and scalable measurement	Governance and explainability concerns
Employee-oriented SERVQUAL	Employees	Scale adaptation and validation	Direct relevance to appraisal	Very recent and still limited

The first cluster concerns SERVQUAL measurement and adaptation, where studies primarily focus on dimensional service-quality evaluation through tangibles, reliability, responsiveness, assurance and empathy. While this stream provides a strong theoretical foundation for service-quality assessment, most studies remain customer-oriented and rarely operationalize SERVQUAL as a direct employee performance evaluation framework (7, 8, 35, 36). This indicates

that employee appraisal architectures grounded explicitly in customer-facing service quality remain underdeveloped.

The second cluster involves hybrid MCDM-based service evaluation, where methods such as MOORA, fuzzy MULTIMOORA, grey AHP-MOORA, fuzzy TOPSIS, Best-Worst Method (BWM) and Combinative Distance-based Assessment (CODAS) are used to rank alternatives under multiple weighted criteria (15, 37, 38). These studies

demonstrate strong methodological capability for structured ranking and prioritization. However, most applications evaluate service units, suppliers, transportation systems, or organizational alternatives rather than individual employee performance. This finding suggests that although MCDM approaches are analytically mature, their integration with employee-centered service-quality constructs remains limited.

Accordingly, evidence from these non-employee applications was interpreted as methodological or transferable evidence rather than as direct evidence that MOORA is already validated for individual employee appraisal. Their contribution lies primarily in demonstrating normalization, weighting, handling of multiple criteria and ranking procedures that may be adapted to employee evaluation after appropriate empirical validation.

The third cluster focuses on HR analytics and people analytics, emphasizing implementation capability, organizational alignment, strategic value creation and data-driven human resource management (18, 39, 40). Although this stream contributes significantly to organizational analytics literature, service-quality constructs are frequently absent. Employee evaluation is commonly approached from operational efficiency, prediction and workforce planning perspectives rather than from customer-oriented service performance. Therefore, HR analytics literature has not yet fully incorporated service-quality logic into employee appraisal design.

The fourth cluster consists of intelligent and explainable DSS, where Explainable Artificial Intelligence (XAI), machine learning, Natural Language Processing (NLP), sentiment analysis and online-review mining are increasingly utilized to measure service quality dynamically (12, 19, 41, 42). These studies indicate substantial progress toward scalable and automated evaluation systems. Nevertheless, concerns regarding explainability, governance, fairness and ethical accountability remain prominent, particularly when evaluation outputs influence managerial decisions and employee appraisal outcomes (22, 43).

The final cluster relates to employee-oriented SERVQUAL applications, which represent the most recent and comparatively limited stream within the literature. Emerging studies have begun adapting SERVQUAL dimensions into employee-focused evaluation contexts, particularly in hospitality and customer-service sectors (44). However, most of these studies remain at the scale-development or conceptual-validation stage and have not yet been integrated into comprehensive DSS architectures.

Collectively, these findings reveal that the conceptual components required for developing a SERVQUAL–MOORA-based employee evaluation system already exist, but they remain fragmented across different research traditions that rarely intersect systematically. Service-quality studies are generally strong in construct development but weak in analytical ranking mechanisms (45). In contrast, MCDM studies excel in computational ranking but often lack validated customer-oriented performance dimensions. Similarly, intelligent DSS studies demonstrate strong automation capability but frequently underemphasize transparency and managerial interpretability. This fragmentation represents a critical opportunity for theoretical and methodological integration between service quality, employee appraisal, MCDM and explainable decision-support research (46).

These five clusters directly address RQ1 by showing that the relevant literature is not organized around a single established SERVQUAL–MOORA employee appraisal model. Instead, the knowledge base consists of complementary but uneven streams in which service-quality measurement, employee analytics, analytical ranking and decision-support functionality have developed largely in parallel.

Comparative Analysis of Prior Studies

The comparative evaluation of representative studies demonstrates substantial variation in methodological focus, unit of analysis and conceptual orientation. The synthesis of prior studies is presented in Table 4.

Table 4: Comparative Analysis of Representative Prior Studies

Domain	Method	Key Contribution	Main Limitation	References
Cultural services	Extended SERVQUAL, fuzzy MULTIMOORA and DSS	Demonstrated hybrid service-quality DSS	Focused on service providers rather than employees	(35)
Public transport	Grey AHP-MOORA	Validated MOORA under uncertainty	Limited HR evaluation relevance	(47)
Call center	Explainable AI DSS	Automated service-quality measurement	Focused on encounter-level quality	(41)
Online service reviews	Dynamic SERVQUAL and hypergraph learning	Real-time service-quality extraction	Employee ranking not explicit	(19)
Hospitality	Extended SERVQUAL and BWM	Adapted SERVQUAL to smart-service context	Not appraisal-oriented	(42)
Hospitality HR	SERVQUAL-E validation	Employee-oriented SERVQUAL adaptation	Limited DSS integration	(44)
HR analytics	SLR and adaptive structuration	Identified HR analytics determinants	Service-quality linkage absent	(39)
HRM methods	SLR of AHP, fuzzy AHP and ANP	Mapped MCDM applications in HRM	MOORA not emphasized	(29)
Personnel selection	SLR of MCDM methods	Identified AI-assisted MCDM trends	Recruitment dominates evaluation	(48)

The comparative analysis demonstrates that no previous study has comprehensively integrated SERVQUAL dimensions, MOORA-based ranking, customer satisfaction validation, explainable DSS and HR governance into a unified employee evaluation architecture. This finding reinforces the novelty of the present review by showing that existing studies tend to address only partial components of a customer-oriented employee evaluation system.

Importantly, Table 4 should not be interpreted as indicating that all listed studies provide equivalent evidence for employee performance appraisal. Studies involving employees or personnel constitute more direct evidence, whereas studies involving service units, public transport, cultural services, or online reviews primarily demonstrate potentially transferable methodological components. This distinction addresses RQ3 and prevents methodological success in unrelated application settings from being interpreted as empirical validation of employee appraisal.

The findings indicate that integrating service-quality theory with formal decision-support algorithms is methodologically plausible. Hybrid MCDM models have demonstrated strong capability in ranking service alternatives under multiple criteria, while intelligent DSS approaches enable dynamic extraction of service-quality

indicators from customer interactions at scale (19, 35, 41). However, this evidence supports the feasibility of individual components rather than proving the effectiveness of a complete SERVQUAL–MOORA employee appraisal system. Direct empirical evidence of the integrated model remains limited.

A recurring limitation across many MCDM-based appraisal studies is the assumption that evaluation criteria are self-evident and inherently valid. In practice, many studies focus heavily on computational ranking accuracy while paying limited attention to whether the selected criteria genuinely reflect customer-experienced service quality (13, 14, 49). As a result, employee evaluation systems may achieve analytical precision without adequately representing the service dimensions that influence customer satisfaction and organizational legitimacy.

Another critical issue concerns the disconnect between measurement and intervention. Several studies successfully rank alternatives but fail to explain how evaluation results support employee development, organizational learning, or service redesign. Conversely, service-quality studies frequently provide rich measurement insights without incorporating formal prioritization mechanisms. This separation limits the managerial usefulness of many existing evaluation

frameworks because performance appraisal should not merely classify employees but should also diagnose which service-quality dimensions require improvement.

The literature further highlights growing concerns regarding governance and ethical accountability in intelligent DSS implementation. Explainable AI and automated evaluation systems increasingly influence managerial decision-making processes, creating potential risks related to transparency, responsibility gaps, bias and employee trust (12, 42). These concerns are especially important in employee appraisal contexts because evaluation outcomes directly affect organizational culture, career progression and perceived fairness. Therefore, explainability, appealability, recalibration mechanisms and bias auditing should be

considered essential components rather than optional extensions of intelligent employee evaluation systems (50, 51).

Defensible Mapping of SERVQUAL

Criteria to Employee Performance

A central issue identified in the review is that SERVQUAL dimensions cannot be transferred mechanically from customer-level service assessment to individual employee appraisal. For employee evaluation, each criterion must represent a behavior or outcome that is sufficiently observable, measurable and attributable to the employee being evaluated. The proposed mapping in Table 5 therefore distinguishes core SERVQUAL dimensions from operational indicators that may complement them within MOORA.

Table 5: Proposed Mapping of SERVQUAL and Operational Indicators to Employee Performance Criteria

Dimension/ Indicator	Employee-level Interpretation	Potential Data Source	MOORA Orientation	Attribution Requirement
Reliability	Accuracy and consistency in delivering promised service	Customer evaluation, supervisor records, service logs	Benefit	Service outcome must be traceable to the employee or responsible team
Responsiveness	Promptness and willingness to respond to customer needs	Customer evaluation, response-time logs	Benefit	Interaction or response must be attributable to the employee
Assurance	Competence, professionalism and ability to generate customer confidence	Customer and supervisor evaluation	Benefit	Direct service interaction should be identifiable
Empathy	Individual attention and understanding of customer needs	Customer evaluation	Benefit	Direct employee–customer interaction is required
Tangibles	Employee-controlled aspects of professional appearance and service presentation	Observation or managerial assessment	Benefit	Infrastructure outside employee control should be excluded
Waiting time	Employee-controllable delay in providing service	Operational system or transaction logs	Cost	System-wide or organizational delays should not be assigned to an individual
Complaint frequency	Number or rate of substantiated complaints attributable to service encounters	Complaint records	Cost	Complaint must be traceable and verified
Service error/deficiency	Errors or deficiencies within the employee's control	Quality-control and operational records	Cost	Responsibility for the error must be identifiable

This mapping responds to RQ2 by establishing a defensible connection between service-quality constructs and employee-level performance indicators. Reliability, responsiveness, assurance

and empathy can generally function as beneficial criteria when higher values indicate stronger employee performance. Tangibles require more cautious operationalization because facilities,

equipment and physical infrastructure may lie outside the employee's control. Consequently, only employee-controllable tangible elements should be included in individual appraisal.

MOORA also allows non-beneficial criteria to be incorporated. Indicators such as attributable waiting time, complaint frequency, service errors, or deficiencies should be modeled as cost criteria because lower values represent preferable performance. This distinction is important because treating every SERVQUAL-related or operational measure as a beneficial criterion would distort the logic of employee ranking.

The proposed mapping is conceptual rather than empirically validated. Therefore, organizations implementing it should first test criterion validity, reliability and sensitivity within the specific service context before using ranking outputs for consequential employment decisions.

Attribution of Customer Evaluations to Employees

Customer-generated evaluations can strengthen employee appraisal only when the evaluated service experience can reasonably be attributed to the employee. Attribution is appropriate when a customer interacts directly with an identifiable employee, when the service transaction can be linked reliably to that employee, or when responsibility for the service outcome is explicitly assigned to a defined team.

Conversely, individual attribution is inappropriate when service quality is substantially determined by organizational systems, infrastructure, staffing shortages, policy constraints, team-based processes, or external disruptions beyond the employee's control. Under such conditions, assigning the resulting customer rating directly to an individual may introduce systematic unfairness. For team-delivered services, the framework should either use team-level evaluation or apply an explicitly defined allocation rule rather than assume individual responsibility.

Customer responses should also be screened for traceability and data adequacy before entering the MOORA decision matrix. Organizations should specify in advance which service encounters are eligible, how customer responses are linked to employees and how potentially inaccurate or contested evaluations are reviewed. These requirements address RQ4 by treating attribution as a governance issue rather than simply a data-processing step.

Distinguishing a Decision Support System from a Ranking Algorithm

The reviewed literature also indicates a need to distinguish analytical ranking from a complete DSS. MOORA is a decision model, but a MOORA calculation alone does not constitute a DSS. Similarly, a spreadsheet that normalizes criteria and produces employee rankings should be regarded as an analytical implementation rather than a fully developed decision-support architecture.

For the purposes of the proposed framework, four levels can be differentiated. First, an algorithmic ranking application performs normalization, weighting, optimization and ranking. Second, a stand-alone or spreadsheet implementation operationalizes these calculations but remains disconnected from a structured managerial workflow. Third, a DSS prototype integrates data input, criterion management, computational processing, result presentation and decision-oriented reporting. Fourth, an operational DSS additionally incorporates organizational data integration, access control, validation, audit trails, governance procedures, managerial interpretation and mechanisms for review or appeal.

This distinction strengthens the information-systems contribution of the review because it positions MOORA as the analytical engine within a broader sociotechnical DSS rather than equating the ranking method itself with the entire decision-support system.

Table 6: Research Gap Analysis

Gap Type	Evidence from Literature	Implication
Theoretical gap	SERVQUAL focuses mainly on customers, while HR analytics focuses mainly on organizations	Need for an employee-centered integrative framework
Methodological gap	MCDM studies often lack validated service-quality constructs	Need to anchor evaluation criteria in SERVQUAL
Outcome gap	Many studies stop at ranking outputs	Need to validate rankings against customer outcomes

Systems gap	DSS studies rarely incorporate HR governance	Need for governance-oriented DSS architecture
Explainability gap	AI-based systems raise transparency and fairness concerns	Need for explainable and auditable evaluation models
Contextual gap	Limited evidence from project-based and service-intensive organizations	Need for broader contextual validation
Temporal gap	Static surveys dominate existing studies	Need for longitudinal and real-time evaluation designs
Attribution gap	Customer perceptions are not always directly traceable to individual employees	Need for explicit rules determining when customer evaluations can be attributed to employees
Implementation gap	Many studies report ranking methods without specifying organizational data flows or managerial processes	Need to distinguish complete DSS implementations from stand-alone ranking algorithms

Research Gap Analysis

The systematic review identified several unresolved theoretical and methodological gaps within the existing literature. The summary of these gaps is presented in Table 6.

These gaps demonstrate that the literature remains fragmented despite substantial methodological advancement. Existing studies tend to prioritize either analytical capability or service-quality measurement but rarely integrate both dimensions into a coherent and explainable employee evaluation framework. The absence of an integrated framework also limits the ability of organizations to connect employee behaviour, customer perception, analytical ranking and

managerial intervention within one decision-support architecture.

Proposed Conceptual Framework

Based on the synthesized findings from the reviewed literature, this study proposes a conceptual framework that positions employee performance evaluation as a multi-layer sociotechnical system integrating service quality assessment, DSS and MCDM principles. As illustrated in Figure 2, the framework combines SERVQUAL-based service evaluation with the MOORA ranking mechanism to establish a transparent, customer-oriented and analytically grounded employee performance evaluation architecture.

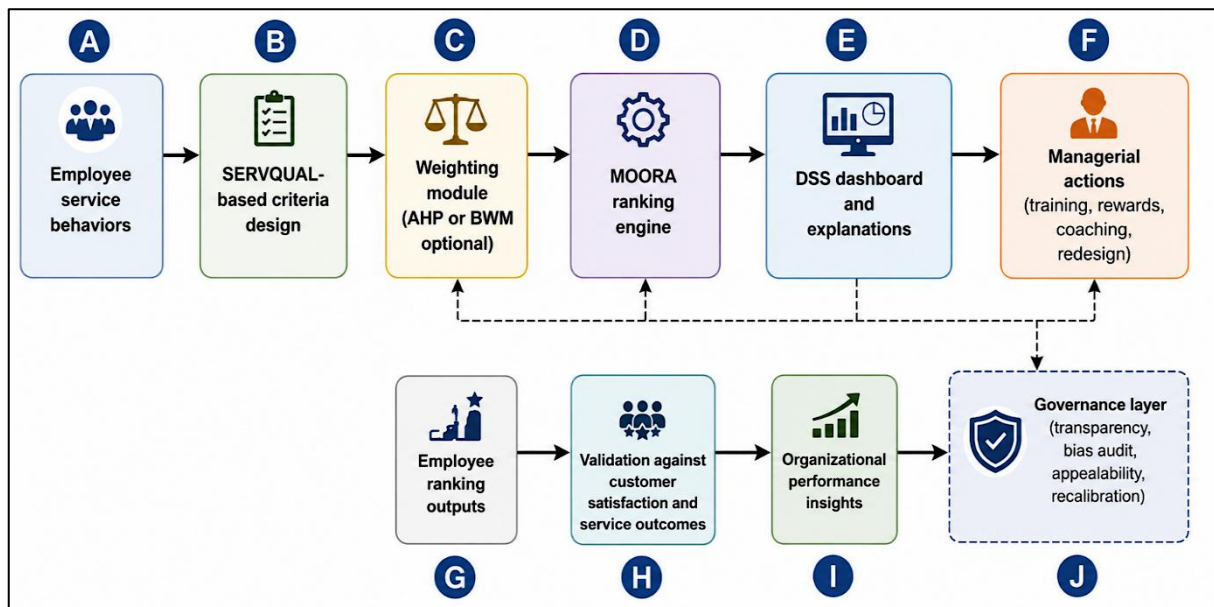


Figure 2: Proposed SERVQUAL–MOORA Decision Support Architecture for Employee Performance Evaluation. (A) Employee Service Behaviour, (B) SERVQUAL-based Criteria, (C) Data and Attribution Validation, (D) Criterion Weighting, (E) MOORA Ranking Engine, (F) DSS Dashboard, (G) Customer and Organizational Outcome Validation, (H) Managerial Action, (I) Governance and Fairness Controls, (J) Employee Review and Recalibration

The framework begins with the employee service behaviour layer, where employee interactions, responsiveness, reliability, assurance, empathy and tangibility are operationalized into measurable indicators derived from SERVQUAL dimensions. This layer represents the primary input domain capturing customer-facing service behaviours and operational service delivery characteristics relevant to organizational performance evaluation.

However, only indicators that can be reasonably attributed to the employee should enter individual appraisal. Indicators substantially determined by infrastructure, organizational procedures, team processes, or uncontrollable conditions should be excluded from individual ranking or assessed at the appropriate organizational or team level.

The second layer consists of the SERVQUAL-based criteria design and weighting process, where evaluation indicators are translated into structured assessment criteria. At this stage, organizations may incorporate weighting techniques such as the Analytic Hierarchy Process (AHP) or Best–Worst Method (BWM) to determine the relative importance of each criterion based on managerial priorities, expert judgments, strategic objectives, or customer analytics (38, 49). The incorporation of weighting mechanisms improves evaluation consistency and strengthens the analytical rigor of the decision model.

Weight-setting authority should be defined before implementation. Because criterion weights directly affect ranking outcomes, they should not be modified informally by a single manager after employee results are known. A predefined governance procedure involving appropriate managerial, HR, expert, or stakeholder input can improve consistency and reduce arbitrary weighting. Sensitivity analysis should subsequently examine whether reasonable changes in weights alter the employee rankings materially.

Subsequently, the framework applies the MOORA ranking engine as the core computational mechanism for employee evaluation. MOORA is positioned as the primary decision-support technique due to its computational efficiency, normalization capability, interpretability and ability to simultaneously process benefit and cost criteria (37). In contrast to black-box predictive systems, MOORA offers transparent ranking logic

that allows organizations to trace and justify evaluation outcomes more effectively.

The resulting outputs are integrated into a DSS dashboard, where performance results, explanatory insights and comparative rankings are presented to managerial users. This layer enables organizational decisionmakers to conduct evidence-based interventions, including employee coaching, targeted training, reward allocation, job redesign and broader service-quality improvement initiatives. Thus, the framework connects evaluation outputs with practical managerial actions rather than treating rankings as final outcomes.

Managers should interpret rankings as decision-support information rather than automatic employment decisions. The dashboard should therefore display not only the final ordering of employees but also criterion-level performance, data provenance, relevant validation information and explanations of the factors contributing to each result.

The framework further incorporates a validation layer, where employee ranking outcomes are evaluated against customer satisfaction indicators, complaint frequencies, loyalty measures and broader service-performance outcomes. This validation process is essential for ensuring that employee evaluation results remain aligned with actual customer experiences and organizational objectives rather than relying solely on internal appraisal metrics.

Finally, the proposed model introduces a dedicated governance layer comprising transparency mechanisms, explainability controls, bias auditing procedures, recalibration protocols and appealability structures. The inclusion of governance mechanisms addresses increasing concerns regarding fairness, accountability and ethical oversight in intelligent decision-support and AI-assisted evaluation systems (12). Rather than replacing managerial judgment with opaque automation, the framework positions advanced analytics as a supporting mechanism for evidence generation while preserving transparent MCDM logic as the auditable core of organizational decision-making.

Operationally, this governance layer should specify at least six elements: who supplies each type of evaluation data; who is authorized to define or revise criterion weights; how frequently

evaluation is performed; how customer responses are linked to individual employees or teams; how managers are expected to interpret and use rankings; and how employees can challenge inaccurate, incomplete, or misattributed evaluations. An appeal should trigger review of the underlying data and attribution process rather than simply allow discretionary modification of the final ranking.

The primary conceptual contribution of this framework lies in its integration of service quality theory, transparent MCDM evaluation, DSS functionality and governance-oriented analytics into a unified employee performance evaluation architecture. The framework also extends existing SERVQUAL and MOORA research by explicitly connecting employee-level service behaviours with customer satisfaction outcomes and organizational performance insights within a scalable and explainable decision-support environment.

Future Research Directions

The review also identifies several important directions for future research. First, future studies should develop dyadic evaluation designs linking customer-rated SERVQUAL assessments with employee self-evaluation and supervisor evaluation. Such designs would enable researchers to examine whether customer perceptions, employee self-assessments and managerial evaluations converge or diverge in explaining service performance.

Second, comparative empirical studies examining MOORA, TOPSIS, PROMETHEE, VIKOR and MULTIMOORA using identical employee datasets would provide stronger methodological insights (52, 53). These comparisons are necessary to determine whether MOORA offers superior interpretability, ranking stability and practical usability compared with alternative MCDM approaches.

Third, future research should investigate explainable hybrid DSS architectures combining automated feature extraction with transparent MCDM-based ranking systems. Longitudinal studies are also needed to examine whether improvements in SERVQUAL-based employee performance scores lead to sustained customer satisfaction and organizational performance improvements over time. Additional research opportunities include cross-sector validation,

fairness and bias auditing, sensitivity analysis of ranking stability and intervention-based studies evaluating how DSS-supported managerial decisions influence employee development and organizational learning.

A priority for subsequent research is a controlled pilot implementation in a bounded service unit where employee–customer interactions can be reliably traced. Such a pilot should prospectively define data providers, attribution rules, criterion weights, evaluation intervals and employee review procedures. The pilot should examine at least three properties of the proposed model: ranking stability across repeated evaluation periods, fairness with respect to data attribution and criterion weighting and managerial meaningfulness of the resulting performance information.

Sensitivity analysis should be incorporated into the pilot to determine whether modest changes in weights, customer-response composition, or inclusion of cost criteria materially alter employee rankings. Where rankings prove unstable, the model should be recalibrated before being used for consequential managerial decisions. Cross-unit and cross-sector replication would then be required to determine whether the framework is transferable beyond the initial implementation context.

Managerial and Theoretical Implications

From a managerial perspective, the findings suggest that employee appraisal systems should evolve from generic administrative procedures into customer-oriented decision architectures. Integrating SERVQUAL dimensions with MOORA-based DSS enables organizations to identify not only which employees underperform, but also which specific service dimensions require improvement. Such insights may support more targeted managerial interventions involving training, coaching, rewards and service redesign. However, the proposed approach should not be interpreted as supporting automatic employee ranking based solely on customer ratings. Its managerial value depends on combining customer-derived information with traceable operational data, appropriate attribution rules, transparent weighting and human review.

From a theoretical perspective, this study contributes by repositioning service quality as an intermediary construct connecting employee

behaviour with customer and organizational outcomes. Furthermore, the study extends MOORA beyond its traditional role as a technical ranking method by conceptualizing it as part of a broader explainable DSS architecture for employee evaluation. Through this integration, the review bridges previously fragmented streams of service management, HR analytics, DSS and MCDM research while offering a foundation for future empirical validation of customer-oriented employee performance evaluation systems.

Recent studies further support the relevance of integrating service-quality constructs, multi-criteria decision-making and explainable decision-support mechanisms in employee performance evaluation. Service-quality research shows that customer satisfaction is influenced not only by perceived service quality and value, but also by trust in service personnel during direct service encounters, indicating the importance of linking employee service behaviour with customer-oriented appraisal systems (54). In parallel, recent applications of modified MOORA in contract employee selection demonstrate that MOORA-based assessment can be adapted to human resource decision-making contexts involving multiple criteria (55). Developments in multi-criteria decision-making, including the Logarithm Methodology of Additive Weights and fuzzy Best-Worst Method, also highlight the importance of transparent and robust criterion-weighting procedures before alternatives are ranked (56, 57). Comparative studies in personnel selection further show that different multi-criteria decision-making methods may produce different prioritization results depending on criteria structure, weighting procedures and decision contexts (58). Therefore, future empirical studies should compare MOORA with alternative methods using the same employee performance dataset to evaluate ranking stability, interpretability and practical usability. In addition, explainable artificial intelligence literature emphasizes that transparency, accountability, trust and human understanding are essential in AI-supported decision systems, particularly when evaluation outcomes may affect employee development, rewards and perceived organizational fairness (59).

Practical and Policy Implications

The findings of this study provide several important implications for practitioners, organizations and policymakers involved in employee performance management and service-quality improvement. For practitioners and Human Resource (HR) managers, the proposed SERVQUAL–MOORA framework offers a more objective and customer-oriented approach to employee evaluation by integrating service-quality dimensions with transparent multi-criteria ranking mechanisms. Unlike conventional appraisal systems that rely heavily on subjective managerial judgment, the framework enables organizations to identify specific service-performance deficiencies related to reliability, responsiveness, assurance, empathy and tangibles. This allows employee evaluation to function not only as a performance classification tool, but also as a diagnostic mechanism for designing targeted training, coaching, reward allocation and service redesign initiatives.

Nevertheless, the framework should be implemented as a decision-support mechanism rather than a fully automated decisionmaker. Rankings should support, not replace, managerial assessment, contextual review and employee due process.

From an organizational perspective, the integration of SERVQUAL, MOORA and DSS may strengthen evidence-based decision-making and improve alignment between employee performance evaluation and customer satisfaction outcomes. The framework also supports explainable and transparent evaluation processes, which are increasingly important in digital HR environments where automated analytics and intelligent DSS are widely adopted (18, 40, 60). By incorporating governance mechanisms such as explainability, bias auditing, recalibration and appealability, organizations may improve employee trust, perceived fairness and accountability in performance appraisal systems. Such governance mechanisms are particularly important because employee evaluation outcomes may directly affect career progression, reward decisions, organizational culture and perceptions of procedural justice.

For policymakers and industry stakeholders, this study highlights the importance of developing governance-oriented guidelines for intelligent

employee evaluation systems. As organizations increasingly adopt Artificial Intelligence (AI)-supported DSS and HR analytics, concerns related to transparency, ethical accountability and algorithmic bias become more significant. Accordingly, future policy frameworks should encourage the implementation of explainable, auditable and human-centred evaluation architectures that balance analytical efficiency with fairness and managerial interpretability. Policy attention should also be directed toward ensuring that technology-supported appraisal systems remain accountable, reviewable and aligned with employee rights and organizational service-quality objectives.

Overall, the results answer the four research questions by showing that:

- a) the literature comprises five complementary but fragmented research streams;
- b) SERVQUAL dimensions can inform employee performance criteria only when they are operationalized as attributable employee behaviors and combined appropriately with benefit and cost indicators;
- c) MOORA and related MCDM evidence from other domains supports methodological transferability rather than direct employee-appraisal validation; and
- d) a complete employee evaluation DSS requires explicit data attribution, criterion-weight governance, validation, managerial interpretation, transparency and employee review mechanisms.

Conclusion

This systematic literature review demonstrates that employee performance evaluation in service-oriented organizations requires an integrated approach that connects customer-perceived service quality with transparent analytical decision-making. The reviewed literature shows that Service Quality (SERVQUAL) provides a strong conceptual basis for translating customer-facing employee behaviours into measurable service-quality dimensions, while Multi-Objective Optimization on the Basis of Ratio Analysis (MOORA) offers an interpretable and structured mechanism for ranking employee performance across multiple criteria. However, the findings also reveal that existing studies remain fragmented across service quality measurement, HR analytics,

Decision Support Systems (DSS) and Multi-Criteria Decision-Making (MCDM). Most prior studies either emphasize service-quality assessment without formal ranking mechanisms or develop computational decision models without sufficient grounding in customer-oriented performance dimensions.

This review further identifies several unresolved gaps, including the limited operationalization of SERVQUAL dimensions as employee-level appraisal criteria, the weak validation of ranking outputs against customer satisfaction outcomes and the insufficient integration of explainability, governance, fairness and ethical accountability in intelligent evaluation systems. To address these gaps, this study proposes a SERVQUAL–MOORA decision-support architecture that combines service-quality indicators, structured weighting mechanisms, transparent ranking logic, customer satisfaction validation and governance-oriented DSS features. The framework further emphasizes that customer evaluations should be attributed to individual employees only when service encounters and outcomes can be reasonably traced to them, while employee-uncontrollable factors should be excluded from individual appraisal. It also distinguishes beneficial performance criteria from non-beneficial operational indicators and positions MOORA as the analytical component of a broader DSS rather than as a complete DSS by itself.

Several limitations should be considered when interpreting the findings. First, the included literature spans heterogeneous service, HR, MCDM and DSS contexts, while studies directly integrating SERVQUAL and MOORA for individual employee performance evaluation remain limited. Consequently, evidence from non-employee application settings was used primarily as methodological or contextual support and should not be interpreted as equivalent empirical evidence for employee appraisal. Second, the review was restricted primarily to English-language journal articles indexed in Scopus and Web of Science and focused mainly on publications from 2019 to 2025, with selected foundational studies included for conceptual continuity. Third, because the reviewed studies involved heterogeneous research designs, units of analysis, criteria and application settings, the evidence was synthesized qualitatively rather than statistically.

Finally, the proposed SERVQUAL–MOORA architecture is conceptual and has not yet been empirically validated as an operational employee performance evaluation system.

Future research should therefore prioritize pilot implementation in clearly bounded service units where employee–customer interactions can be reliably traced. Such studies should evaluate ranking stability, fairness of customer-to-employee attribution, sensitivity to criterion weights and the managerial meaningfulness of evaluation outputs before the model is used for consequential employment decisions. Comparative studies using the same employee dataset should also examine MOORA alongside alternative MCDM methods, while longitudinal and cross-sector studies are needed to assess whether SERVQUAL-based employee performance improvements are consistently associated with customer satisfaction and organizational performance outcomes. These empirical tests are necessary to establish the validity, robustness and practical transferability of the proposed framework.

Abbreviations

AI: Artificial Intelligence, DSS: Decision Support System, HR: Human Resource, MCDM: Multi-Criteria Decision-Making, MMAT: Mixed Methods Appraisal Tool, MOORA: Multi-Objective Optimization on the Basis of Ratio Analysis, PRISMA: Preferred Reporting Items for Systematic Reviews and Meta-Analyses, SERVQUAL: Service Quality, SLR: Systematic Literature Review, XAI: Explainable Artificial Intelligence.

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Author Contributions

Ayulita Purnama Sari: Conceptualization, Literature Search, Data Extraction, Formal Analysis, Writing – Original Draft, Murpin Josua Sembiring: Supervision, Methodology, Writing – Review and Editing, Methodological Guidance, Manuscript Refinement, David Sukardi Kodrat: Supervision, Validation, Writing – Review and Editing, Theoretical Validation, Critical Revision. All authors have read and approved the final version of the manuscript.

Conflict of Interest

The authors declare that there is no conflict of interest related to this manuscript.

Data Availability

The data used in this study were obtained from previously published articles and publicly available academic databases. All relevant sources are cited in the manuscript.

Declaration of Artificial Intelligence (AI) Assistance

Artificial intelligence-assisted tools were used in the preparation of this manuscript. OpenAI's ChatGPT was used to support structural refinement of the manuscript and graphical refinement of Figures 1 and 2. Grammarly and DeepL were used during the initial manuscript preparation for language refinement and translation assistance. All AI-assisted outputs were critically reviewed and verified by the authors. The authors take full responsibility for the originality, scientific content, interpretation, accuracy of references and final version of the manuscript.

Ethics Approval

This study is a systematic literature review based on previously published studies and does not involve human participants, animals, clinical data, or personally identifiable information. Therefore, ethics approval was not required.

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References

- Slack N, Singh G, Sharma S. The effect of supermarket service quality dimensions and customer satisfaction on customer loyalty and disloyalty dimensions. *Int J Qual Serv Sci.* 2020;12(3):297–318. doi:10.1108/IJQSS-10-2019-0114
- Li F, Lu H, Hou M, Cui K, Darbandi M. Customer satisfaction with bank services: The role of cloud services, security, e-learning and service quality. *Technol Soc.* 2021;64:101487. doi:10.1016/j.techsoc.2020.101487
- Shin J, Joung J, Lim C. Determining directions of service quality management using online review mining with interpretable machine learning. *Int J Hosp Manag.* 2024;118:103684. doi:10.1016/j.ijhm.2023.103684
- Rather RA, Hollebeek LD, Islam JU. Tourism-based customer engagement: The construct, antecedents and consequences. *Serv Ind J.* 2019;39(7–8):519–40.

- doi:10.1080/02642069.2019.1570154
5. Ameen N, Tarhini A, Reppel A, Anand A. Customer experiences in the age of artificial intelligence. *Comput Human Behav.* 2021;114:106548. doi:10.1016/j.chb.2020.106548
 6. Wider W, Tan FP, Tan YP, Lin J, Fauzi MA, Wong LS, Tanucan JCM, Hossain SFA. Service quality (SERVQUAL) model in private higher education institutions: A bibliometric analysis of past, present and future prospects. *Soc Sci Humanit Open.* 2024;9:100805. doi:10.1016/j.ssaho.2024.100805
 7. Rita P, Oliveira T, Farisa A. The impact of e-service quality and customer satisfaction on customer behavior in online shopping. *Heliyon.* 2019;5(10):e02690. doi:10.1016/j.heliyon.2019.e02690
 8. Prentice C, Dominique Lopes S, Wang X. The impact of artificial intelligence and employee service quality on customer satisfaction and loyalty. *J Hosp Mark Manag.* 2020;29(7):739–56. doi:10.1080/19368623.2020.1722304
 9. Sharma V, Jangir K, Gupta M, Rupeika-Apoga R. Does service quality matter in FinTech payment services? An integrated SERVQUAL and TAM approach. *Int J Inf Manag Data Insights.* 2024;4(2):100252. doi:10.1016/j.jjime.2024.100252
 10. Božanić D, Pamučar D, Milić A, Marinković D, Komazec N. Modification of the logarithm methodology of additive weights (LMAW) by a triangular fuzzy number and its application in multi-criteria decision making. *Axioms.* 2022;11(3):89. doi:10.3390/axioms11030089
 11. Peykani P, Emrouznejad A, Nouri M. Best-worst multi-criteria decision-making method: A review of the literature. *Socioecon Plann Sci.* 2026;104:102345. doi:10.1016/j.seps.2025.102345
 12. Poszler F, Lange B. The impact of intelligent decision-support systems on humans' ethical decision-making: A systematic literature review and an integrated framework. *Technol Forecast Soc Change.* 2024;204:123403. doi:10.1016/j.techfore.2024.123403
 13. Margherita A. Human resources analytics: A systematization of research topics and directions for future research. *Hum Resour Manag Rev.* 2022;32(2):100795. doi:10.1016/j.hrmr.2020.100795
 14. Roul J, Mohapatra LM, Kamesh AVS. Exploring the landscape of human resource analytics: A systematic literature review and future agenda. *Hum Resour Dev Int.* 2025;28(4):591–604. doi:10.1080/13678868.2024.2334982
 15. Pandey V, Komal, Dincer H. A review on TOPSIS method and its extensions for different applications with recent development. *Soft Comput.* 2023;27(23):18011–39. doi:10.1007/s00500-023-09011-0
 16. Hafezalkotob A, Hafezalkotob A, Liao H, Herrera F. An overview of MULTIMOORA for multi-criteria decision-making: Theory, developments, applications and challenges. *Inf Fusion.* 2019;51:145–77. doi:10.1016/j.inffus.2018.12.002
 17. Singh R, Pathak VK, Kumar R, Dikshit M, Aherwar A, Singh V, Singh T. A historical review and analysis on MOORA and its fuzzy extensions for different applications. *Heliyon.* 2024;10(3):e25453. doi:10.1016/j.heliyon.2024.e25453
 18. Căvescu AM, Popescu N. Predictive analytics in human resources management: Evaluating AIHR's role in talent retention. *AppliedMath.* 2025;5(3):99. doi:10.3390/appliedmath5030099
 19. Yi W, Zhang L, Kuzmin S, Gerasimov I, Cheng X. DSSQEM-IHK: Dynamic SERVQUAL service quality evaluation method integrating hypergraph knowledge. *Inf Process Manag.* 2025;62(3):104030. doi:10.1016/j.ipm.2024.104030
 20. Mohseni S, Zarei N, Ragan ED. A multidisciplinary survey and framework for design and evaluation of explainable AI systems. *ACM Trans Interact Intell Syst.* 2021;11(3–4):1–45. doi:10.1145/3387166
 21. Belle V, Papantonis I. Principles and practice of explainable machine learning. *Front Big Data.* 2021;4:688969. doi:10.3389/fdata.2021.688969
 22. Kim J, Maathuis H, Sent D. Human-centered evaluation of explainable AI applications: A systematic review. *Front Artif Intell.* 2024;7:1456486. doi:10.3389/frai.2024.1456486
 23. Aravindkumar A, Ramadoss M, Fakhruddin Ahmed SA, Sampath V, Lakshminarayanan K. Explainable AI in healthcare: A systematic review of XAI use cases in imaging, diagnostics and rehabilitation. *Front Artif Intell.* 2026;9:1749527. doi:10.3389/frai.2026.1749527
 24. Page MJ, Moher D, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, Shamseer L, Tetzlaff J, Akl EA, Brennan SE, Chou R, Glanville J, Grimshaw JM, Hróbjartsson A, Lalu MM, Li T, Loder EW, Mayo-Wilson E, McDonald S, McGuinness LA, Stewart LA, Thomas J, Tricco AC, Welch VA, Whiting P, McKenzie JE. PRISMA 2020 explanation and elaboration: Updated guidance and exemplars for reporting systematic reviews. *BMJ.* 2021;372:n160. doi:10.1136/bmj.n160
 25. Hong QN, Gonzalez-Reyes A, Pluye P. Improving the usefulness of a tool for appraising the quality of qualitative, quantitative and mixed methods studies, the Mixed Methods Appraisal Tool (MMAT). *J Eval Clin Pract.* 2018;24(3):459–67. doi:10.1111/jep.12884
 26. Hong QN, Fàbregues S, Bartlett G, Boardman F, Cargo M, Dagenais P, Gagnon MP, Griffiths F, Nicolau B, O'Cathain A, Rousseau MC, Vedel I, Pluye P. The Mixed Methods Appraisal Tool (MMAT) version 2018 for information professionals and researchers. *Educ Inf.* 2018;34(4):285–91. doi:10.3233/EFI-180221
 27. Lockwood C, Porritt K, Munn Z, Rittenmeyer L. Chapter 2: Systematic reviews of qualitative evidence. In: Aromataris E, Munn Z, editors. *JBIM Manual for Evidence Synthesis.* 2020. doi:10.46658/JBIMES-20-03
 28. Bottesch S, Schwenke C, Förster M, Klier M. Driving business value through people analytics: Literature review and research agenda from an information systems perspective. *Electron Mark.* 2025;35(1):106.

- doi:10.1007/s12525-025-00842-3
29. Salehzadeh R, Ziaei M. Decision making in human resource management: A systematic review of the applications of analytic hierarchy process. *Front Psychol.* 2024;15:1400772. doi:10.3389/fpsyg.2024.1400772
 30. Olawuyi OS, Kleyhans C. A bibliometric analysis of service quality in the hospitality industry (2014–2024). *Adm Sci.* 2025;15(6):215. doi:10.3390/admsci15060215
 31. Kwon Y, Lemieux M, McTavish J, Wathen N. Identifying and removing duplicate records from systematic review searches. *J Med Libr Assoc.* 2015;103(4):184–8. doi:10.3163/1536-5050.103.4.004
 32. Gough D. Weight of evidence: A framework for the appraisal of the quality and relevance of evidence. *Res Pap Educ.* 2007;22(2):213–28. doi:10.1080/02671520701296189
 33. Lajeunesse MJ. Facilitating systematic reviews, data extraction and meta-analysis with the metagear package for R. *Methods Ecol Evol.* 2016;7(3):323–30. doi:10.1111/2041-210X.12472
 34. Behzadian M, Kazemzadeh RB, Albadvi A, Aghdasi M. PROMETHEE: A comprehensive literature review on methodologies and applications. *Eur J Oper Res.* 2010;200(1):198–215. doi:10.1016/j.ejor.2009.01.021
 35. Maghsoodi AI, Saghaei A, Hafezalkotob A. Service quality measurement model integrating an extended SERVQUAL model and a hybrid decision support system. *Eur Res Manag Bus Econ.* 2019;25(3):151–64. doi:10.1016/j.jiedeen.2019.04.004
 36. Stević Ž, Brković N. A novel integrated FUCOM-MARCOS model for evaluation of human resources in a transport company. *Logistics.* 2020;4(1):4. doi:10.3390/logistics4010004
 37. Madanchian M, Taherdoost H. Applications of multi-criteria decision making in information systems for strategic and operational decisions. *Computers.* 2025;14(6):208. doi:10.3390/computers14060208
 38. McCartney S, Fu N. Bridging the gap: Why, how and when HR analytics can impact organizational performance. *Manag Decis.* 2022;60(13):25–47. doi:10.1108/MD-12-2020-1581
 39. Wang L, Zhou Y, Sanders K, Marler JH, Zou Y. Determinants of effective HR analytics implementation: An in-depth review and a dynamic framework for future research. *J Bus Res.* 2024;170:114312. doi:10.1016/j.jbusres.2023.114312
 40. Vilone G, Longo L. Notions of explainability and evaluation approaches for explainable artificial intelligence. *Inf Fusion.* 2021;76(C):89–106. doi:10.1016/j.inffus.2021.05.009
 41. Guo Y, Li Y, Liu D, Xu SX. Measuring service quality based on customer emotion: An explainable AI approach. *Decis Support Syst.* 2024;176:114051. doi:10.1016/j.dss.2023.114051
 42. Ayvaz-Çavdaroglu N, Iyanna S, Foster M. Smart service quality in hospitality: A quantitative assessment using MCDM and clustering methods. *Int J Hosp Manag.* 2024;123:103931. doi:10.1016/j.ijhm.2024.103931
 43. Amann J, Blasimme A, Vayena E, Frey D, Madai VI. Explainability for artificial intelligence in healthcare: A multidisciplinary perspective. *BMC Med Inform Decis Mak.* 2020;20(1):310. doi:10.1186/s12911-020-01332-6
 44. Yazıcı Ayyıldız A, Koc E, Ayyıldız T, Hatipoglu S. SERVQUAL awareness and ability of employees (SERVQUAL-E): Scale adaptation and validity testing. *Int J Contemp Hosp Manag.* 2026;38(5):1625–43. doi:10.1108/IJCHM-07-2025-1143
 45. Ocampo L, Alinsub J, Casul RA, Enquig G, Luar M, Panuncillon N, Bongo M, Ocampo CO. Public service quality evaluation with SERVQUAL and AHP-TOPSIS: A case of Philippine government agencies. *Socioecon Plann Sci.* 2019;68:100604. doi:10.1016/j.seps.2017.12.002
 46. Ciano T, Ferrara M. Explainable multi-criteria decision making for tourism economics: Integrating XAI with MCDM for a robust accommodation performance assessment. *Decis Econ Financ.* 2025:1–23. doi:10.1007/s10203-025-00553-6
 47. Moslem S, Çelikbilek Y. An integrated grey AHP-MOORA model for ameliorating public transport service quality. *Eur Transp Res Rev.* 2020;12(1):68. doi:10.1186/s12544-020-00455-1
 48. Pandey N, Dash SP, Kaur P. A systematic review of multi-criteria decision-making (MCDM) methods applied to personnel selection: Trends, models and effectiveness. *OPSEARCH.* 2026. doi:10.1007/s12597-026-01136-8
 49. Venugopal M, Madhavan V, Prasad R, Raman R. Transformative AI in human resource management: Enhancing workforce planning with topic modeling. *Cogent Bus Manag.* 2024;11(1):2432550. doi:10.1080/23311975.2024.2432550
 50. Tursunbayeva A, Pagliari C, Di Lauro S, Antonelli G. The ethics of people analytics: Risks, opportunities and recommendations. *Pers Rev.* 2022;51(3):900–21. doi:10.1108/PR-12-2019-0680
 51. Muchowe RM, Mubango H, Soko M, Dumba E, Chivabvu E. The moderating role of HR analytics on the effects of high-performance work systems on the productivity of manufacturing SMEs in Harare CBD. *Cogent Bus Manag.* 2025;12(1):2514810. doi:10.1080/23311975.2025.2514810
 52. Ristandi DK, Maarif MS, Affandi J, Sukmawati A. Ecosystem-driven adoption of human resource analytics: Institutional mechanisms and perceived organizational performance in Indonesia. *Cogent Bus Manag.* 2026;13(1):2642549. doi:10.1080/23311975.2026.2642549
 53. Minbaeva D. Disrupted HR? *Hum Resour Manag Rev.* 2021;31(4):100820. doi:10.1016/j.hrmmr.2020.100820
 54. Uzir MUH, Al Halbusi H, Thurasamy R, Hock RLT, Aljaberi MA, Hasan N, Hamid M. The effects of service quality, perceived value and trust in home delivery service personnel on customer satisfaction: Evidence from a developing country. *J Retail Consum Serv.* 2021;63:102721. doi:10.1016/j.jretconser.2021.102721
 55. Waqas Arshad M, Sintaro S, Rahmanto Y, Wantoro A, Setiawansyah. Optimization of alternative assessment with modified MOORA method: Case

- study of contract employee selection. *KLIK Kaji Ilm Inform Komput.* 2024;4(6):3099–107. doi:10.30865/klik.v4i6.1891
56. Pamučar D, Žižović M, Biswas S, Božanić D. A new logarithm methodology of additive weights (LMAW) for multi-criteria decision-making: Application in logistics. *Facta Univ Ser Mech Eng.* 2021;19(3):361–80. doi:10.22190/FUME210214031P
 57. Ecer F, Yaran Ögel İ, Göçoğlu V. Interlinking SDGs and Cittaslow criteria for sustainable local decision prioritization: A parsimonious fuzzy best-worst method. *Sustain Dev.* 2026:1–24. doi:10.1002/sd.70804
 58. Pinto-DelaCadena PA, Liern V, Vinueza-Cabezas A. A comparative analysis of multi-criteria decision methods for personnel selection: A practical approach. *Mathematics.* 2024;12(2):324. doi:10.3390/math12020324
 59. Minh D, Wang HX, Li YF, Nguyen TN. Explainable artificial intelligence: A comprehensive review. *Artif Intell Rev.* 2022;55(5):3503–68. doi:10.1007/s10462-021-10088-y
 60. Arrieta AB, Díaz-Rodríguez N, Del Ser J, Bennetot A, Tabik S, Barbado A, Garcia S, Gil-Lopez S, Molina D, Benjamins R, Chatila R, Herrera F. Explainable artificial intelligence (XAI): Concepts, taxonomies, opportunities and challenges toward responsible AI. *Inf Fusion.* 2020;58:82–115. doi:10.1016/j.inffus.2019.12.012

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