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Human Resource Metrics as Predictors of Organizational Productivity: A Systematic Review of Evidence from Service-Based Organizations

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Abstract **Original Research Article**

The growing demand for evidence-based human resource management (HRM) has positioned Human Resource (HR) metrics as central instruments for evaluating workforce contribution to organizational outcomes. Yet the literature linking specific HR metrics to productivity in service-based organizations remains fragmented, conceptually inconsistent, and dominated by sources whose methodological rigour has not been independently examined. This article addresses that gap through a systematic review of peer-reviewed and grey literature examining three widely used HR metrics – absenteeism rate, employee turnover rate, and training return on investment (ROI) – as predictors of organizational productivity in service contexts. Following a PRISMA-informed protocol, the review synthesises findings from sources published between 1995 and 2025, drawing principally on human capital theory and the resource-based view of the firm as interpretive frameworks. The synthesis indicates consistent evidence that absenteeism and turnover are negatively associated with productivity-related outcomes, primarily through workflow disruption, knowledge loss, and replacement cost, while training investment evaluated through ROI-based frameworks shows a generally positive but contextually variable association with performance. However, the review also identifies a persistent evidence gap: rigorous, peer-reviewed empirical validation of HR-metric–productivity relationships specifically within service organizations – as distinct from manufacturing or mixed-sector samples – remains scarce, and much of the practitioner literature lacks methodological transparency. The article concludes that HR metrics retain meaningful predictive value for organizational productivity but that their interpretation requires sectoral and contextual calibration rather than universal application. Implications for HR measurement practice, theoretical refinement, and a future empirical research agenda are discussed.

Keywords: Human Resource Metrics, HR Analytics, Employee Turnover, Absenteeism, Training Return on Investment, Organizational Productivity, Service Organizations, Systematic Review.

1. Introduction

1.1 Background and Context

Human capital is widely regarded as the most consequential and least standardized resource an organization manages. In service-based organizations – banks, telecommunications providers, hospitality firms, healthcare facilities, and educational institutions – the simultaneity of production and consumption means that employee behaviour is not merely an input to service delivery but is, in a meaningful sense, the service itself (Cascio, 2018). It follows that the workforce-related indicators an organization chooses to monitor, and the rigour with which it interprets them, carry direct consequences for organizational performance.

Over the past three decades, human resource management (HRM) has undergone a measurable shift away from administrative recordkeeping toward what Becker, Huselid, and Ulrich (2001) term a strategic contribution model, in which HR metrics function as the evidentiary basis for workforce decisions. This shift has been accelerated by the broader diffusion of analytics across business functions: organizations increasingly expect HR, like finance or operations, to substantiate its claims with measurable indicators rather than professional intuition alone (Marler & Boudreau, 2017). Absenteeism rate, employee turnover rate, and training return on investment (ROI) have emerged as three of the most frequently cited metrics in this literature, in part because each captures a distinct dimension of workforce functioning – attendance reliability, retention of accumulated capability, and the financial productivity of development spending, respectively.

Despite their prominence in practitioner discourse, the empirical literature connecting these specific metrics to organizational productivity in service settings is considerably less settled than the frequency of their citation might suggest. Marler and Boudreau's (2017) evidence-based review of the HR analytics literature is instructive here: of sixty identified publications addressing HR analytics, only fourteen were located in quality peer-reviewed journals, leading the authors to conclude that evidence-based, high-quality research on the field remained limited relative to its practitioner visibility. This disjuncture between the popularity of HR metrics in organizational practice and the rigour of the evidence underpinning their use motivates the present review.

1.2 Statement of the Problem

Service organizations routinely collect substantial volumes of workforce data – attendance records, exit data, training expenditure – yet the translation of this data into reliable predictive insight about productivity remains uneven across the literature and across practice. Three interrelated problems characterize the current state of knowledge. First, conceptual inconsistency: organizational productivity is defined and operationalized differently across studies, ranging from financial output per employee to composite indices of service quality and customer satisfaction, which complicates cross-study comparison (Cascio, 2018; Dessler, 2022). Second, sectoral conflation: a substantial share of the foundational HRM-performance literature, including highly cited studies such as Huselid (1995), draws on broad, cross-industry samples in which service organizations are not separately analyzed, leaving open the question of whether HR-metric–productivity relationships established in manufacturing-dominated samples generalize to labour-intensive, customer-facing service contexts. Third, evidentiary asymmetry: much of the contemporary literature on HR analytics and workforce metrics originates from industry reports, consultancy white papers, and practitioner commentary rather than peer-reviewed sources, raising legitimate questions about selection bias, replicability, and the generalizability of frequently cited statistics (Marler & Boudreau, 2017).

These problems matter because organizations that misread the predictive value of HR metrics risk two opposite and costly errors: over-investing in metrics with weak productivity linkage, or under-investing in workforce monitoring that genuinely predicts

performance decline. A systematic, critical synthesis of the existing evidence is therefore a necessary precursor to either theoretical refinement or future primary research.

1.3 Purpose and Significance of the Study

This article undertakes a systematic review of the literature examining absenteeism rate, employee turnover rate, and training ROI as predictors of organizational productivity, with particular attention to evidence drawn from or applicable to service-based organizations. The review serves three purposes. Academically, it consolidates a literature that is currently dispersed across HRM, organizational behaviour, and analytics journals, and it evaluates that literature against an explicit methodological standard rather than treating all sources as equally authoritative. Practically, it offers HR practitioners in service industries an evidence-calibrated view of which metrics carry the strongest support for predictive use, and under what conditions that support weakens. Theoretically, it tests the continued adequacy of human capital theory (Schultz, 1961; Becker, 1964) and the resource-based view (Barney, 1991) as explanatory frameworks for HR-metric–productivity relationships in light of more recent analytics-era evidence.

1.4 Research Questions

This review addresses four research questions, framed to permit a synthesis of existing evidence rather than presupposing causal conclusions:

RQ1: What is the documented relationship between employee absenteeism and organizational productivity in service-based organizations, and how robust is the supporting evidence?

RQ2: How does employee turnover rate relate to organizational productivity, and what mechanisms does the literature propose to explain this relationship?

RQ3: What does the evidence indicate about the relationship between training ROI and organizational productivity, and how consistent is this relationship across contexts?

RQ4: To what extent does the existing literature support treating these HR metrics, individually or jointly, as reliable predictors of productivity specifically within service-sector organizations?

1.5 Scope and Delimitation

The review is delimited to literature addressing three HR metrics – absenteeism rate, employee turnover rate, and training ROI – in relation to organizational, rather than purely individual-level, productivity outcomes. It draws on sources published between 1995 and 2025, with deliberate emphasis on literature from 2015 onward to capture the analytics-era evolution of the field, while retaining foundational theoretical sources predating this period where they remain conceptually load-bearing (e.g., Schultz, 1961; Becker, 1964; Huselid, 1995). The review does not extend to primary data collection; it is explicitly a synthesis of existing evidence, and its conclusions are bounded accordingly. Sector emphasis is placed on banking, telecommunications, hospitality, healthcare, and education, consistent with common operationalizations of "service-based organizations" in the HRM literature, though studies drawing on mixed-sector or manufacturing-inclusive samples are retained where they offer relevant theoretical or comparative value, with their limitations explicitly noted in the synthesis.

2. Literature Review

2.1 The Concept of Human Resource Metrics

Human Resource Metrics are quantifiable indicators used to assess the efficiency, effectiveness, and organizational contribution of workforce-related practices (Becker, Huselid, & Ulrich, 2001). Their conceptual appeal rests on a transformation thesis: that HR metrics convert human resource management from an administrative, cost-centred function into a strategic, evidence-generating one capable of demonstrating its contribution to organizational objectives in terms comparable to other business functions (Becker et al., 2001; Ulrich,

Younger, Brockbank, & Ulrich, 2012). Commonly cited metrics include employee turnover rate, absenteeism rate, cost per hire, time-to-fill, employee engagement scores, training effectiveness, revenue per employee, and human capital ROI.

Marler and Boudreau (2017) distinguish HR analytics from simpler HR metrics reporting on the grounds that analytics involves the systematic use of data, statistical models, and technology to improve workforce-related decisions, whereas metrics reporting may remain purely descriptive. This distinction matters for the present review: many organizations that claim to use HR metrics "predictively" are, on closer inspection, engaged in retrospective reporting rather than genuine predictive modelling, a conflation that several reviewed sources note as a persistent weakness in practice (Rasmussen & Ulrich, 2015; Marler & Boudreau, 2017).

2.2 Organizational Productivity in Service Contexts

Organizational productivity is conventionally defined as the efficiency with which inputs – labour, capital, technology – are converted into outputs (Cascio, 2018). In manufacturing contexts, this conversion is often directly observable through unit output per labour hour. In service organizations, by contrast, productivity is comparatively difficult to isolate because outputs are frequently intangible, co-produced with the customer, and quality-laden rather than purely volume-based (Dessler, 2022). Consequently, service-sector productivity measures in the literature span a wide range – revenue per employee, customer satisfaction indices, service-quality ratings, error or complaint rates, and composite operational-efficiency scores – a heterogeneity that complicates direct comparison across studies and that the present review treats as an explicit limitation of the underlying evidence base rather than a problem this review itself can resolve.

2.3 Employee Absenteeism and Productivity

Absenteeism – an employee's failure to report for scheduled work – is among the most frequently monitored HR metrics because it is comparatively easy to record and aggregate. The mechanisms by which absenteeism is theorized to depress productivity are reasonably well established: increased workload transferred to remaining staff, disrupted service continuity, diminished customer experience, and elevated short-term labour cost through overtime or temporary cover (Cascio, 2018). Contemporary labour-market data lend some support to the practical salience of this metric: U.S. national absence-rate figures rose marginally between 2023 and 2024, alongside reported increases in mental-health-related leave, suggesting that absenteeism remains an active and rising concern for employers rather than a static or declining one. Saleh and Shahidan (2023), examining occupational stress, similarly report that elevated job stress is associated with increased absenteeism and turnover intention and with reduced individual performance in public-sector organizational settings, lending support to a stress-mediated pathway between working conditions, attendance, and productivity outcomes.

Nonetheless, the literature on absenteeism's productivity effect in service organizations specifically is thinner than its frequent citation suggests. Much of the available evidence is drawn from cross-sectoral or manufacturing contexts, or from industry survey data rather than peer-reviewed causal designs, meaning that the absenteeism–productivity relationship in service-specific contexts is more often asserted than directly tested.

2.4 Employee Turnover and Productivity

Employee turnover – the rate at which employees exit and are replaced – occupies a more developed position in the empirical literature than absenteeism, anchored substantially by Huselid's (1995) influential study. Huselid (1995) demonstrated, using a national sample of nearly one thousand U.S. firms, that systems of high-performance HR practices were associated with statistically and economically significant effects on intermediate workforce outcomes – specifically turnover and productivity – as well as on longer-term corporate financial performance. This finding has been widely cited as foundational evidence that HR practices and the turnover outcomes they shape carry measurable

productivity consequences, although later commentators note that the study's cross-industry sample limits direct inference for any single sector, including services (Huselid, 1995; Paauwe & Boselie, as referenced across subsequent HRM literature).

More recent labour-market evidence reinforces the practical mechanisms through which turnover is theorized to erode productivity: replacement costs vary substantially by role, with estimates citing costs in the range of roughly 200% of annual salary for managerial and leadership roles, around 80% for technical professionals, and approximately 40% for frontline positions, alongside a documented loss of accumulated organizational knowledge and disrupted team continuity when experienced employees depart. In service organizations specifically, where front-line employees are frequently the principal interface with the customer, the loss of tenure-accumulated service knowledge is argued to carry a disproportionately direct productivity cost relative to back-office or production roles (Cascio, 2018).

A construction-sector systematic review by way of methodological comparison is instructive: even within a single, relatively well-studied sector, researchers conducting a systematic literature review of employee turnover noted that, despite a substantial existing body of work on its causes and consequences, no comprehensive review had previously synthesised this knowledge for that sector, illustrating a broader pattern in the turnover literature whereby synthesis lags behind primary publication. This pattern recurs in the service-sector literature reviewed here.

2.5 Training Return on Investment and Productivity

Training ROI is most commonly anchored in the Kirkpatrick four-level training evaluation model – reaction, learning, behaviour, and results – to which Phillips subsequently added a fifth level explicitly quantifying financial return, typically expressed as the ratio of net monetary benefits to training cost (Phillips, as discussed in the training-evaluation literature; see also the Kirkpatrick model's continued use as the most widely applied evaluation framework among learning professionals). Phillips's extension is theoretically attractive because it allows training – traditionally a cost-centre activity – to be expressed in the same financial register as other capital investments, directly supporting the human capital argument that workforce development functions analogously to investment in physical capital (Schultz, 1961; Becker, 1964).

However, the practical application of ROI-based training evaluation carries well-documented limitations that bear directly on this review's interpretive caution. Isolating the specific contribution of a training intervention from concurrent organizational changes is methodologically demanding, commonly requiring control groups, trend analysis, or expert estimation techniques that many organizations lack the analytical capacity to implement rigorously. The financial-conversion step – translating intangible benefits such as service-quality improvement into monetary terms – introduces a further source of estimation error and potential bias, and several practitioner-oriented sources explicitly caution that the method is time-consuming, resource-intensive, and consequently most defensible when applied selectively rather than as a routine universal metric. These limitations suggest that positive training-ROI findings in the literature should be read as indicative rather than as precise causal estimates of productivity gain.

2.6 HR Analytics, Predictive Modelling, and the Limits of the Evidence Base

The broader HR analytics literature situates absenteeism, turnover, and training metrics within a wider predictive-analytics movement in HRM. Reviews of this literature report that HR analytics has been applied to recruitment prediction, retention forecasting, and the identification of high-turnover-risk employees through analysis of performance ratings, absenteeism patterns, and demographic variables, with temporal or longitudinal analysis of

these factors argued to provide early warning of impending departure. Some individual studies report striking explanatory power: for instance, a frequently cited HR-analytics initiative in a large fashion retailer found that adding supervisory staff increased hourly sales, with the model explaining a substantial share of variance, while an aviation-sector analysis linking HR metrics to revenue and passenger volume reported very high explained variance in both outcome models.

These individual results are notable, but Marler and Boudreau's (2017) evidence-based review provides the necessary corrective context: of sixty publications on HR analytics identified across multiple databases, only fourteen met the bar of quality peer-reviewed research, and the authors concluded that, notwithstanding evidence linking analytics adoption to organizational performance, adoption itself remained low and the supporting academic evidence base sparse. A more recent bibliometric mapping of human resource analytics scholarship across 2014–2024 corroborates this picture of a rapidly growing but still maturing field, in which predictive applications – including absenteeism prediction – are an active but comparatively young research stream. Subsequent commentary in the field has continued to note that HR analytics requires stronger empirical validation, particularly in explaining causal relationships with organizational outcomes, and that analytics effectiveness depends on data integration, organizational process maturity, and analytical competence rather than on the availability of the metrics alone (Minbaeva, 2018; Marler & Boudreau, 2017).

Taken together, the literature reviewed in this section supports three provisional conclusions that motivate the synthesis presented in Section 4: that plausible and theoretically grounded mechanisms exist linking each of the three focal metrics to productivity outcomes; that the empirical support for these mechanisms is real but uneven in quality, sector specificity, and methodological transparency; and that no identified study in this review provides a rigorously validated, sector-specific test of all three metrics jointly within service organizations – a gap this review formally identifies in Section 2.8.

2.7 Theoretical and Conceptual Framework

2.7.1 Human Capital Theory

Human Capital Theory, originating with Schultz (1961) and elaborated by Becker (1964), provides the primary theoretical anchor for this review. The theory proposes that investment in employee knowledge, skill, and capability functions analogously to investment in physical capital, generating returns in the form of increased productivity and, by extension, organizational performance. Applied to the present review, the theory offers a coherent rationale for why training ROI should predict productivity (training as capital investment) and why turnover should be costly (turnover as capital depreciation through the loss of firm-specific accumulated knowledge). Its primary limitation, noted by several contemporary commentators, is that it treats human capital as a relatively homogeneous, fungible asset and offers less guidance on context-specific moderators – such as sector, role type, or organizational HR system maturity – that the more recent analytics literature suggests are empirically consequential.

2.7.2 The Resource-Based View and Complementary Perspectives

The resource-based view (RBV) of the firm complements human capital theory by emphasising that workforce-related resources generate sustained competitive advantage only when they are valuable, rare, difficult to imitate, and non-substitutable (Barney, 1991). Applied here, the RBV helps explain why turnover is particularly costly in service organizations: tacit, firm-specific service knowledge held by experienced employees is precisely the kind of resource that is difficult to rapidly reproduce through hiring, making its loss through turnover disproportionately damaging relative to settings where knowledge is more codified or transferable. Strategic HRM scholarship in the Huselid (1995) and Becker et al. (2001) tradition can be read as an attempt to operationalize RBV insights through

measurable HR systems and metrics, providing the conceptual bridge between the theory-level claims of human capital and RBV perspectives and the metric-level claims examined in this review.

2.8 Research Gap

Three gaps in the existing literature justify the present review. First, a sector-specificity gap: although foundational studies such as Huselid (1995) and influential reviews such as Marler and Boudreau (2017) provide strong general support for HR-metric–performance linkages, comparatively few peer-reviewed, sector-isolated studies test these relationships specifically within service organizations as distinct from manufacturing or mixed-sector samples. Second, an evidentiary-quality gap: a substantial proportion of frequently circulated claims about absenteeism, turnover, and training-ROI effects on productivity originate in industry reports and practitioner commentary rather than peer-reviewed research, a pattern explicitly documented by Marler and Boudreau (2017) and corroborated by subsequent bibliometric work. Third, an integrative gap: no identified source in this review jointly synthesises evidence on all three focal metrics – absenteeism, turnover, and training ROI – within a single, sector-focused, critically evaluated framework; existing reviews tend to address either HR analytics broadly, or a single metric (most often turnover) in isolation. The present review is positioned to address these three gaps through a systematic, transparent, and critically evaluative synthesis.

3. Methodology

3.1 Research Design and Approach

This study adopts a systematic literature review (SLR) design, following a protocol informed by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) framework, adapted for a qualitative, non-meta-analytic synthesis of heterogeneous HRM literature. A systematic review design was selected over a primary survey-based design for two principled reasons. First, the research questions posed in Section 1.4 are evaluative and synthetic in nature they ask what the existing evidence shows and how robust that evidence is rather than confirmatory of a single new dataset. Second, given the documented evidentiary asymmetry identified in Section 2.6, a transparent, replicable, and critically appraised synthesis of existing sources offers greater immediate scholarly value than an additional small-sample primary study would, and provides the necessary evidentiary foundation upon which future primary research – quantitative, qualitative, or mixed-methods – can be more rigorously designed.

3.2 Search Strategy and Information Sources

Literature was identified through structured searches of academic databases and indexing services, including Scopus-indexed and ABDC-listed journal sources, supplemented by targeted searches of grey literature industry reports, professional-body publications, and consultancy white papers used specifically to triangulate practitioner-reported statistics against peer-reviewed findings rather than as primary evidentiary sources in their own right. Search terms combined core constructs using Boolean operators, including: (“human resource metrics” OR “HR analytics” OR “workforce analytics”) AND (“productivity” OR “organizational performance”) AND (“absenteeism” OR “turnover” OR “training ROI” OR “training return on investment”) AND (“service organization” OR “service sector”). Searches were not restricted to a single database to reduce coverage bias, and reference lists of retrieved review articles (e.g., Marler & Boudreau, 2017) were hand-searched for additional eligible sources, a technique commonly termed backward citation tracking.

3.3 Eligibility Criteria

Sources were assessed against the following inclusion and exclusion criteria, summarised in Table 1.

Criterion	Inclusion	Exclusion
Publication type	Peer-reviewed journal articles; recognised institutional/professional reports used for contextual triangulation	Unverified blog posts; promotional vendor material with no methodological disclosure
Timeframe	1995–2025 (foundational theory permitted pre-1995, e.g., Schultz, 1961)	Superseded editions where a later edition was available
Topical relevance	Directly addresses absenteeism, turnover, or training ROI in relation to productivity or organizational performance	Addresses HRM broadly with no measurable productivity or performance linkage
Sector relevance	Service-sector studies prioritised; mixed-sector studies retained with limitations noted	Single-firm case studies with no transferable methodological detail
Language	English-language sources	Non-English sources without verified translation

Table 1. Eligibility criteria applied in the systematic review.

3.4 Selection Process and Quality Appraisal

Identified records were screened in two stages. Title and abstract screening eliminated sources with no substantive relevance to the focal constructs. Full-text screening then assessed remaining sources against the eligibility criteria in Table 1 and against a quality-appraisal heuristic adapted from Marler and Boudreau's (2017) evidence-based review approach, which distinguishes sources offering verifiable methodological detail (sample, measures, analytic technique) from sources offering only summary claims without disclosed methodology. Sources in the latter category were retained only where used explicitly for contextual or descriptive triangulation (e.g., labour-market statistics) and were not used as the evidentiary basis for causal or predictive claims. This distinction is maintained transparently throughout Sections 2 and 4 through explicit attribution and qualifying language (e.g., "industry data indicate," as distinct from "Huselid (1995) demonstrated").

3.5 Analytical Framework: Thematic Synthesis

Included sources were analysed using thematic synthesis, a recognised qualitative method for systematic reviews in management and social-science research. Each source was coded against the three focal metrics (absenteeism, turnover, training ROI), the productivity outcome measure(s) employed, the theoretical framework invoked, the sector or sample context, and the nature of the

evidence offered (peer-reviewed empirical, peer-reviewed review/synthesis, or grey-literature/industry data). Codes were then grouped into descriptive themes (Section 2) and subsequently into analytical themes addressing the four research questions directly (Section 4). This approach was selected over meta-analytic pooling of effect sizes because the underlying studies employ heterogeneous outcome measures and report results in non-commensurable metrics (correlation coefficients, explained variance, percentage cost figures, qualitative judgments), precluding statistically valid pooling; this limitation is acknowledged explicitly in Section 6.3.

3.6 Ethical Considerations

As a literature-based study involving no human participants, this review did not require institutional ethics board approval. Ethical rigour was nonetheless exercised in three respects consistent with international scholarly publishing standards: full and accurate attribution of all sourced material in accordance with APA (7th edition) referencing conventions; explicit disclosure of source-quality distinctions (Section 3.4) to avoid misrepresenting practitioner or industry claims as peer-reviewed empirical findings; and transparent acknowledgement, in Section 6.3, of the limitations inherent in synthesising heterogeneous, non-commensurable evidence.

3.7 Trustworthiness, Reliability, and Validity of the Review

In qualitative and review-based research, trustworthiness is typically assessed through criteria analogous to reliability and validity in quantitative work: credibility, transferability, dependability, and confirmability (a framework widely used in qualitative methods literature). Credibility was supported through the use of a documented, replicable search strategy (Section 3.2) and explicit eligibility criteria (Table 1). Dependability was supported by maintaining a consistent coding and quality-appraisal procedure (Sections 3.4–3.5) across all included sources. Confirmability was supported by grounding all synthesised claims in directly traceable sources, with grey-literature claims explicitly flagged as such rather than blended indistinguishably with peer-reviewed findings. Transferability the extent to which findings generalise beyond the specific sources reviewed is treated as a limitation rather than a strength of this review and is discussed candidly in Section 6.3, given the sector-specificity gap identified in Section 2.8.

4. Results / Findings

This section presents the synthesis of the reviewed literature, organised according to the four research questions established in Section 1.4. Consistent with the methodological commitments outlined in Section 3.4, findings are explicitly distinguished by evidentiary type peer-reviewed empirical findings, peer-reviewed reviews or syntheses, and grey-literature or industry data used for contextual triangulation so that the strength of each claim is transparent to the reader.

4.1 RQ1: Absenteeism and Organizational Productivity

The reviewed literature converges on a negative directional relationship between absenteeism and productivity, operating principally through three mechanisms: increased workload redistribution to present employees, service-continuity disruption in customer-facing roles, and elevated short-term labour costs through overtime or temporary cover (Cascio, 2018). Saleh and Shahidan's (2023) work on occupational stress provides peer-reviewed support for a contributing causal pathway, finding that job stress is associated with increased absenteeism and turnover intention alongside reduced individual performance in public-sector settings – a finding directly relevant to labour-intensive public service organizations such as healthcare and education.

However, the evidentiary base specific to absenteeism's productivity effect in private service organizations (banking, telecommunications, hospitality) is comparatively thin. Much of the corroborating evidence located in this review is

descriptive labour-market data for example, rising national absence rates and associated mental-health-leave trends rather than peer-reviewed causal studies isolating absenteeism's productivity effect within a defined service-sector sample. The finding for RQ1 is therefore best characterised as theoretically well-grounded and directionally consistent across available sources, but empirically under-tested in rigorously designed, sector-specific peer-reviewed studies.

4.2 RQ2: Employee Turnover and Organizational Productivity

Turnover is the most empirically substantiated of the three focal metrics. Huselid's (1995) large-sample study remains the most frequently cited peer-reviewed empirical anchor, demonstrating statistically and economically significant relationships between systems of high-performance HR practices and intermediate outcomes including turnover and productivity, with downstream effects on corporate financial performance. The mechanisms proposed across the literature – loss of firm-specific knowledge, replacement and onboarding cost, disrupted team continuity, and reduced morale among remaining staff – are theoretically coherent with both human capital theory and the resource-based view (Sections 2.7.1–2.7.2).

Contemporary labour-market data corroborate the cost mechanisms even where peer-reviewed sector-specific causal studies are unavailable: replacement-cost estimates cited in recent workforce analyses range from approximately 40% of annual salary for frontline roles to roughly 200% for managerial and leadership positions, a gradient consistent with the resource-based view's prediction that the loss of more tacit, harder-to-replace capability carries proportionally higher cost. For service organizations, where frontline employees frequently embody the customer-facing service relationship itself, this cost structure implies a productivity penalty that may be disproportionately significant relative to back-office or production functions, although this review did not locate a peer-reviewed study directly quantifying this sectoral differential.

The overall finding for RQ2 is that turnover demonstrates the strongest and most consistently documented negative relationship with productivity among the three focal metrics, supported by at least one rigorous, large-sample, peer-reviewed empirical study (Huselid, 1995), though that foundational study itself draws on a cross-industry rather than service-isolated sample – a limitation this review flags rather than elides.

4.3 RQ3: Training ROI and Organizational Productivity

The training-ROI literature reviewed here supports a generally positive but conditional relationship between training investment and productivity. The Kirkpatrick–Phillips evaluation framework provides the dominant analytical structure: training effects are assessed at the level of participant reaction, learning, on-the-job behavioural application, organizational business impact, and, in the Phillips extension, monetised return on investment. The framework's own methodological literature is candid about its limitations isolating training's specific contribution from concurrent organizational change requires control groups, trend analysis, or expert estimation, and the financial-conversion step necessarily involves estimation rather than direct measurement for intangible benefits such as service-quality improvement.

This methodological candour is significant for the present synthesis: it suggests that reported positive training-ROI figures in the practitioner literature should be read as informative but approximate, rather than as precise causal estimates of productivity gain. No peer-reviewed, service-sector-specific study located in this review reports a training-ROI–productivity relationship with the same scale or rigour as Huselid's (1995) turnover-productivity finding. The finding for RQ3 is therefore that training ROI is theoretically well-supported as a productivity predictor (consistent with human capital theory) and practically endorsed across the training-evaluation literature, but that its empirical measurement carries greater inherent estimation uncertainty than either absenteeism or turnover, and that rigorous peer-reviewed validation specific to

service organizations remains limited.

4.4 RQ4: Joint Predictive Value of HR Metrics for Service-Sector Productivity

Addressing the integrative question of whether these metrics, individually or jointly, function as reliable productivity predictors specifically within service organizations, the synthesis yields a calibrated rather than unequivocal answer. Individual analytics-driven case findings cited in the broader HR analytics literature report substantial explanatory power for example, a retail-sector HR analytics initiative linking supervisory staffing levels to incremental hourly sales, and an aviation-sector study reporting very high explained variance in models linking HR metrics to revenue and passenger-volume outcomes. These individual results demonstrate that the proposed relationships are empirically detectable under favourable data conditions.

However, Marler and Boudreau's (2017) systematic evidence-based review situates these individual successes within a broader evidentiary context that materially qualifies RQ4: of sixty publications identified on HR analytics, only fourteen met a quality peer-reviewed threshold, and the authors concluded that the field's academic evidence base remained sparse relative to its adoption and visibility in practice. This conclusion has been substantively reaffirmed by subsequent bibliometric mapping of the field, which characterises HR analytics scholarship over 2014–2024 as a rapidly growing but still maturing research stream.

Table 2 summarises the synthesis across the three focal metrics, distinguishing the strength of theoretical grounding from the strength of available peer-reviewed empirical support – a distinction this review treats as the central evidentiary finding of the study.

HR Metric	Direction of Relationship	Theoretical Grounding	Peer-Reviewed Empirical Support (Service-Specific)	Evidence Strength
Absenteeism rate	Negative	Strong (workflow disruption, stress-performance pathway)	Limited; mostly cross-sectoral or descriptive data	**Moderate**
Employee turnover rate	Negative	Strong (human capital depreciation; RBV)	Moderate – strong (Huselid, 1995, cross-industry)	**Strong**
Training ROI	Positive	Strong (human capital investment logic)	Limited; estimation-dependent, sector-specific studies scarce	**Moderate**

Table 2. Synthesis matrix of HR metric–productivity relationships identified in the reviewed literature.

The overall finding for RQ4 is that the literature supports treating these three HR metrics as plausible and partially validated, rather than fully and rigorously validated, predictors of productivity specifically within service organizations. Turnover carries the strongest combined theoretical and

empirical support; absenteeism and training ROI are theoretically well-grounded but comparatively under-tested in sector-specific, peer-reviewed empirical work. This calibrated conclusion directly informs the discussion of theoretical and practical implications in Section 5.

5. Discussion

5.1 Interpreting the Synthesis Against Theory

The pattern of findings reported in Section 4 is broadly consistent with the theoretical frameworks adopted in this review, but with an important qualification that the discussion now develops. Human capital theory (Schultz, 1961; Becker, 1964) predicts that workforce investment yields productivity returns and that the loss of accumulated capability through turnover or absenteeism erodes those returns. The synthesis supports this prediction directionally for all three metrics. However, the theory itself offers limited guidance on why the empirical support for turnover should be markedly stronger than for absenteeism or training ROI. The resource-based view (Barney, 1991) offers a more precise explanation: turnover represents the loss of a resource that is plausibly valuable, rare, and difficult to imitate (tacit, firm-specific service knowledge), whereas absenteeism is a more transient and recoverable disruption, and training ROI depends on a capability being successfully created and retained in the first place itself partly contingent on the turnover rate. This suggests a theoretically important interaction that the existing literature has not adequately tested: training investment's productivity return may itself be moderated by the organization's turnover rate, since training expenditure on employees who subsequently leave does not accrue the long-run productivity benefit the theory predicts. This interaction is, to the knowledge developed through this review, an underexplored proposition meriting dedicated future empirical attention (see Section 6.2).

5.2 Comparison with Existing Literature

The finding that turnover carries the strongest documented evidentiary support is consistent with the relative maturity of the turnover literature generally, anchored by Huselid's (1995) study, which remains among the most cited works in strategic HRM three decades after publication. This review's finding that absenteeism and training ROI are comparatively under-tested in service-specific peer-reviewed work aligns with, and extends, Marler and Boudreau's (2017) broader conclusion that the HR analytics evidence base remains sparse relative to its practitioner visibility. Where this review extends rather than merely confirms the existing literature is in its explicit, metric-by-metric calibration of evidence strength (Table 2), which prior reviews – typically organised around HR analytics as a unified field rather than around specific, comparably evaluated metrics have not presented in this disaggregated form.

The review's findings also complicate, rather than simply confirm, a common assumption in practitioner literature: that HR metrics generally, once adopted, function as reliable predictive tools. The methodological candour found within the training-evaluation literature itself explicit acknowledgement that isolating training's effect requires control groups or expert estimation, and that financial conversion of intangible benefits is inherently approximate suggests that even well-established, widely used metrics carry meaningful measurement uncertainty that practitioner discourse does not always foreground.

5.3 Theoretical Significance

Theoretically, this review's principal contribution is the explicit identification of an evidence-strength gradient across commonly co-cited HR metrics, rather than treating "HR metrics" as a theoretically undifferentiated category. This has implications for how strategic HRM theory should frame predictive claims: rather than asserting that "HR metrics predict productivity" as an undifferentiated proposition (as the framing implicit in much practitioner literature suggests), the evidence supports a more precise, metric-differentiated theoretical claim in which turnover functions as a comparatively robust predictor, while absenteeism and training ROI function as theoretically grounded but empirically

provisional predictors whose service-sector-specific validation remains an open research task.

5.4 Practical and Managerial Significance

For HR practitioners in service organizations, the practical implication is one of calibrated rather than uniform confidence in metric-based decision-making. Turnover-reduction investment can be pursued with comparatively greater confidence that the underlying evidence supports a productivity return, particularly for roles carrying high tacit or firm-specific knowledge. Absenteeism monitoring remains a reasonable and low-cost early-warning practice, consistent with its proposed role as a leading indicator of disengagement or stress-related decline, but managers should treat absenteeism-based productivity forecasts with appropriate caution given the comparative thinness of sector-specific causal evidence. Training ROI calculations, similarly, retain real diagnostic value but should be reported and interpreted as estimates bounded by known measurement limitations rather than as precise financial facts, consistent with the candour already present in the underlying evaluation-methodology literature itself.

5.5 Addressing Contradictions and Unexpected Patterns

One pattern in the synthesis warrants explicit discussion because it runs counter to a common practitioner assumption: individual case-level analytics findings (e.g., the retail and aviation examples noted in Section 4.4) report very high explained variance, yet the field-level review evidence (Marler & Boudreau, 2017) characterises the overall academic evidence base as sparse and of uneven quality. These two observations are not, in fact, contradictory once properly interpreted: striking individual-firm results are precisely the kind of finding most likely to be reported, published, and subsequently cited, while methodologically weaker or null findings are systematically less likely to enter the visible literature – a publication-bias dynamic well documented in management research more broadly. This review's calibrated conclusion (Section 4.4) is intended to correct for this asymmetry by weighting the systematic evidence-based review (Marler & Boudreau, 2017) and bibliometric mapping evidence at least as heavily as individually striking case findings, rather than allowing vivid examples to substitute for systematic evidence of generalizability.

6. Conclusion

6.1 Summary of Key Findings

This review systematically synthesised the literature examining absenteeism rate, employee turnover rate, and training ROI as predictors of organizational productivity, with particular attention to service-based organizations. Four conclusions follow directly from the synthesis presented in Section 4. First, absenteeism demonstrates a theoretically well-grounded but empirically under-tested negative relationship with productivity in service-specific contexts (RQ1). Second, employee turnover demonstrates the strongest combined theoretical and peer-reviewed empirical support among the three focal metrics, anchored substantially by Huselid's (1995) foundational large-sample study, albeit with an acknowledged cross-industry rather than service-isolated evidentiary base (RQ2). Third, training ROI demonstrates a generally positive but estimation-dependent relationship with productivity, with the underlying evaluation methodology itself acknowledging meaningful measurement uncertainty (RQ3). Fourth, considered jointly, these metrics constitute plausible but not fully and rigorously validated predictors of service-sector productivity, with the field's evidence base per Marler and Boudreau's (2017) systematic review – remaining sparse relative to its visibility in organizational practice (RQ4).

6.2 Scholarly Contribution

This review makes three identifiable contributions to the literature. First, it provides an explicit, metric-differentiated evidence-strength synthesis (Table 2) where prior literature has more often treated HR analytics or HR metrics as an undifferentiated category. Second, it identifies a theoretically

motivated but empirically unexplored interaction between training ROI and turnover – namely, that training investment's realised productivity return is plausibly moderated by the rate at which trained employees subsequently exit the organization – which existing literature has not, to this review's knowledge, directly tested and which is proposed here as a concrete avenue for future empirical work. Third, it offers a transparent methodological template, distinguishing peer-reviewed empirical evidence from grey-literature contextual data, that future reviews in this domain may adopt to avoid conflating evidentiary tiers.

6.3 Limitations of the Review

This review is subject to limitations that should inform how its conclusions are used. As a qualitative thematic synthesis rather than a statistical meta-analysis, it does not produce pooled effect-size estimates and cannot quantify the magnitude of the relationships it identifies; this approach was a deliberate methodological choice given the non-commensurable outcome measures across included studies (Section 3.5), but it limits the precision of practical recommendations. The review is further limited by the sector-specificity gap it itself identifies (Section 2.8): several of the most rigorous peer-reviewed sources available (notably Huselid, 1995) are cross-industry rather than service-isolated, meaning that service-sector conclusions in this review rest partly on theoretical extension rather than direct sector-specific empirical confirmation. Finally, as with any literature review, search and selection decisions, however systematically documented (Section 3.2–3.4) – cannot guarantee identification of every relevant source, particularly given the dispersion of HR analytics scholarship across management, computing, and organizational-behaviour outlets noted in recent bibliometric mapping of the field.

6.4 Recommendations

1. HR departments in service organizations should continue to monitor turnover with high confidence in its productivity relevance, prioritising retention strategies for roles carrying high tacit, firm-specific service knowledge, where the resource-based view (Section 2.7.2) suggests replacement cost is disproportionately high.

2. Absenteeism should continue to be monitored as a low-cost, early-warning indicator, but productivity forecasts derived from absenteeism data should be presented with explicit uncertainty given the comparative thinness of service-specific peer-reviewed evidence identified in this review.

3. Training ROI calculations should be reported using the full Kirkpatrick–Phillips framework with explicit disclosure of the isolation method used (control group, trend analysis, or expert estimation) so that decision-makers can appropriately weight the resulting figure rather than treating it as a precise financial fact.

4. Organizations should track training ROI and turnover jointly rather than independently, given this review's theoretical proposition (Section 5.1) that training's realised return is plausibly moderated by subsequent attrition among trained employees.

5. Academic researchers should prioritise sector-isolated, peer-reviewed primary studies – quantitative, qualitative, or mixed-methods – explicitly testing these three metrics within defined service-sector samples (banking, telecommunications, hospitality, healthcare, education) to close the sector-specificity gap identified in Section 2.8.

6.5 Suggestions for Future Research

Building directly on the gaps and propositions identified above, four directions for future research are proposed. First, sector-isolated primary studies employing validated productivity measures specific to service contexts (e.g., service-quality indices, customer satisfaction scores, revenue per employee) would directly address the sector-specificity gap (Section 2.8) and permit more confident generalisation than the present review's largely theory-extended conclusions allow. Second,

longitudinal designs tracking absenteeism, turnover, and training investment simultaneously within the same organizational sample would allow direct empirical testing of the training–turnover interaction proposed in Section 5.1. Third, future research employing meta-analytic techniques, once a sufficient body of commensurably measured studies accumulates, could quantify effect-size magnitudes that the present qualitative synthesis was not designed to produce. Fourth, comparative research across service subsectors (e.g., contrasting banking and hospitality) would help establish whether the productivity relevance of these metrics varies meaningfully within the broad "service organization" category, which this review treated as a single analytical unit for tractability but which the literature suggests may itself be usefully disaggregated in future work.

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Appendix A: PRISMA-Informed Selection Flow

The table below summarises the staged selection process described in Section 3.4, reported in narrative form consistent with PRISMA reporting conventions adapted for a non-meta-analytic qualitative synthesis.

Stage	Process and Rationale
Identification	Database and grey-literature searches conducted using the Boolean search strings specified in Section 3.2.
Screening	Title and abstract review to remove records with no substantive relevance to absenteeism, turnover, or training ROI in relation to productivity.
Eligibility assessment	Full-text review against the inclusion/exclusion criteria in Table 1, with quality appraisal distinguishing peer-reviewed empirical, peer-reviewed review, and grey-literature sources.
Inclusion and synthesis	Eligible sources coded thematically (Section 3.5) and synthesised against the four research questions in Section 4.

Table A1. Staged selection and synthesis process.

Appendix B: Glossary of Key Terms

Absenteeism rate: The proportion of scheduled working time lost to unplanned employee absence.

Employee turnover rate: The rate at which employees exit an organization, voluntarily or involuntarily, within a defined period.

Training return on investment (ROI): The net monetary benefit of a training intervention expressed as a percentage of its total cost, typically calculated as (Training Benefits – Training Costs) ÷ Training Costs × 100.

Organizational productivity: The efficiency with which an organization converts inputs (labour, capital, technology) into valuable outputs, operationalised in service contexts through measures such as revenue per employee, service quality, and customer satisfaction.

HR analytics: The systematic use of workforce data, statistical models, and technology to inform and improve human resource and organizational decisions.