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From Hidden Costs to Measurable Impact: A Systematic Review for Employee Turnover Costing

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Abstract: This study investigates how employee turnover costs are conceptualized, measured, and operationalized in the literature. It aims to address methodological fragmentation in turnover cost estimation and to clarify the full economic impact of employee turnover on organizations. **Prior Work:** The study builds on established research in human resource management, human capital theory, and organizational performance, where employee turnover is widely recognized as a critical cost driver. However, prior work shows inconsistency in how turnover costs are defined and measured, particularly regarding indirect and intangible costs. **Approach:** A systematic literature review was conducted following Preferred Reporting Items for Systematic Reviews and Meta-Analyses 2020 guidelines. The review analysed 32 peer-reviewed studies published between 2010 and 2025, retrieved from Elsevier Scopus, Web of Science, ScienceDirect, and JSTOR. **Results:** Findings show strong consistency in the inclusion of direct costs such as recruitment, selection, onboarding, and training. In contrast, indirect and intangible costs including productivity loss, knowledge erosion, coordination disruption, and innovation effects are rarely fully captured. The review also identifies widespread reliance on multiplier-based estimation methods with limited methodological rigor and weak validation. **Implications:** The study is relevant for researchers in human resource management and managerial accounting, as well as practitioners seeking more accurate workforce cost estimation. It highlights the need for improved integration between human resource analytics and structured cost accounting systems. **Value:** The paper synthesizes fragmented research streams and highlights a critical

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methodological gap, emphasizing the need for standardized and activity-based approaches capable of capturing the full economic impact of employee turnover.

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JEL Classification: J63

1. Introduction

Employee turnover has emerged as one of the most strategically significant phenomena in contemporary organizational management. Over the past decade, structural labor market transformations, accelerated digitalization, demographic shifts and the COVID-19 pandemic have substantially increased workforce mobility across industries (Sull, Sull & Zweig, 2022). Despite extensive theoretical development, the financial quantification of employee turnover remains methodologically fragmented and lacks standardization across studies. Traditional turnover research has primarily focused on behavioural and psychological antecedents such as job satisfaction, organizational commitment and leadership dynamics (Hom, Lee, Shaw & Hausknecht, 2017). While these perspectives provide important explanations for why employees leave organizations, they offer limited insight into how turnover costs can be systematically identified, classified and measured.

From a financial and managerial perspective, this limitation represents a significant challenge, as organizations increasingly require evidence-based approaches for evaluating the economic consequences of workforce instability. Existing literature suggests that turnover costs extend far beyond direct and observable expenditures such as recruitment, hiring, and training (Cascio, 2006). Empirical studies further demonstrate that indirect and opportunity-related costs, including productivity loss, coordination inefficiencies, vacancy effects and knowledge depletion often represent the largest proportion of total turnover-related economic impact (Hancock, Allen, Bosco, McDaniel & Pierce, 2013).

From a human capital perspective, employees represent value-generating organizational assets whose knowledge, skills and experience contribute directly to organizational performance (Becker, 1964). Consequently, employee turnover may result not only in replacement costs but also in the erosion of accumulated human capital, social capital and organizational knowledge structures (Dess & Shaw, 2001; Nyberg & Ployhart, 2013). More recent developments in HR analytics and digital

workforce management systems have introduced new opportunities for improving turnover measurement through data-driven approaches and workforce analytics (Marler & Boudreau, 2017; Minbaeva, 2018). However, the existing literature remains fragmented, with limited integration between human resource analytics, organizational behavior perspectives and financial cost measurement approaches. Given these limitations, there is a need for a systematic synthesis of the existing literature on turnover cost estimation. Therefore, this study conducts a Systematic Literature Review (SLR) of peer-reviewed studies published between 2010 and 2025 in order to identify dominant turnover cost components, evaluate existing measurement approaches and examine the extent to which technological and analytical developments have influenced turnover cost estimation methodologies. The review is guided by the following research questions:

RQ1: What direct, indirect and intangible cost components are identified in employee turnover cost literature (2010–2025)?

RQ2: What methodological approaches dominate employee turnover cost estimation?

RQ3: What major methodological and conceptual gaps exist in current turnover cost literature?

RQ4: How have technological developments and HR analytics influenced turnover cost measurement approaches?

This study contributes to the literature by synthesizing fragmented research on turnover costing into a structured analytical overview, identifying major methodological limitations in existing estimation approaches and highlighting emerging directions in turnover cost measurement research.

2. Methodology

This study adopts a Systematic Literature Review (SLR) methodology to provide a transparent, structured and replicable synthesis of research on employee turnover cost estimation. The review follows the PRISMA 2020 guidelines proposed by Matthew J. Page et al. (2021), which offer a standardized framework for identifying, screening, assessing and synthesizing relevant literature. The SLR approach was selected due to the fragmented and multidisciplinary nature of turnover cost research,

which spans human resource management, organizational behavior, human capital theory and management accounting.

2.1. Data Sources, Search Strategy and Study Selection

To ensure broad coverage of peer-reviewed academic literature, four major databases were searched: Elsevier ScienceDirect, Clarivate Web of Science, Elsevier Scopus and JStore. Their combined use improved retrieval completeness and reduced publication bias by capturing both indexed and full-text studies across management, HRM and accounting disciplines. A structured keyword-based search was developed using Boolean combinations of: “employee turnover cost,” “cost of turnover,” “employee attrition cost,” “human capital loss,” “productivity loss due to turnover” and “replacement cost model.” The search was limited to peer-reviewed journal articles, English-language publications and studies published between 2010 and 2025. Foundational studies published prior to 2010 were selectively retained where necessary to support theoretical grounding. Non-English books, conference papers were excluded from this search.

Title and abstract screening is conducted by the first author. A random 20% sample of screened records was independently assessed by the second author to verify consistency and any disagreements were resolved through discussion until consensus was reached. Full-text screening was conducted jointly by both authors. Inclusion required studies to explicitly address employee turnover costs, turnover-related productivity loss, human capital loss, cost estimation models or HR analytics related to turnover measurement. The screening and selection process followed PRISMA 2020 procedures (Page et al., 2021), as illustrated in Figure 1. Of the 487 records initially identified, 66 duplicates were removed, leaving 421 for title and abstract screening. Of these, 309 were excluded at this stage for the following reasons: topic mismatch (study discussed turnover behavior or antecedents without addressing costs, $n \approx 180$); wrong unit of analysis (macro-level labor market studies without organizational cost data, $n \approx 70$); outside the date range or not peer-reviewed ($n \approx 59$). The remaining 112 records were assessed at full-text stage, of which 80 were excluded: 35 did not meet the minimum threshold for cost component specificity required by the inclusion criteria; 28 reported turnover-related outcomes (e.g. performance or engagement) without cost estimation; and 16 were methodologically insufficient for quality inclusion. Thirty-two studies were included in the final review.

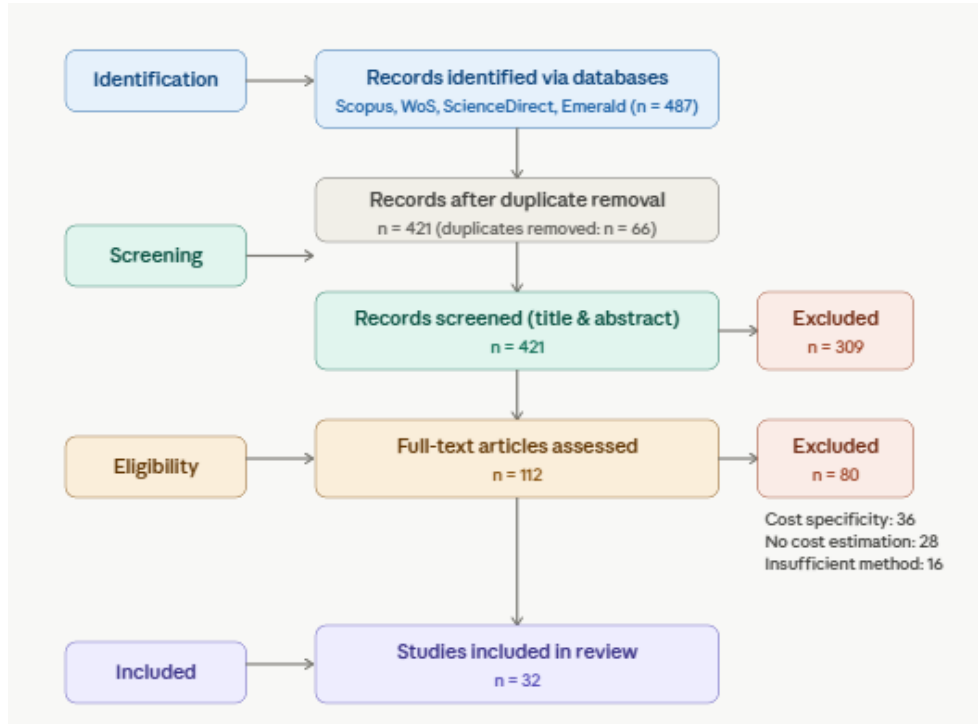


Figure 1. PRISMA 2020 flow diagram: Systematic literature review

Source: Page et al. (2021). PRISMA 2020 statement

In table 2 (Anex) we have mentioned all the literature and analysed based on sector context, study type, approach used and generalized the key findings and key limitations for each of the article. The analysis of the 32 included studies reveals a consistent methodological gap: while direct replacement costs are frequently estimated, no study proposes an integrated, replicable quantification model that simultaneously captures direct, indirect, and intangible cost dimensions.

2.2. Quality Assessment and Data Extraction

All included studies underwent a structured quality assessment to ensure analytical rigor, conceptual relevance and methodological transparency. Because the review included empirical, conceptual and methodological studies, the assessment framework evaluated not only methodological rigor but also the relevance of each study to employee turnover cost measurement and estimation. The quality

assessment framework was adapted from the Critical Appraisal Skills Program (CASP, 2018) and systematic review evaluation approaches proposed by David Tranfield et al. (2003). Studies were evaluated using seven assessment criteria: (1) clarity of research objective, (2) explicit definition of turnover cost components, (3) methodological transparency, (4) validity and appropriateness of data sources, (5) specificity of turnover cost identification or operationalization, (6) relevance to the review research questions, and (7) acknowledgement of methodological limitations. Criteria were scored using a structured scale ranging from 0 to 2 points depending on the criterion type and level of relevance. The complete assessment framework is presented in Table 2. Studies scoring below the minimum quality threshold were excluded during the full-text screening stage due to insufficient methodological transparency or lack of identifiable turnover cost components. Foundational studies published prior to 2010 were retained selectively for theoretical grounding and conceptual contextualization, although they were not part of the primary systematic review timeframe.

Table 1. Quality assessment criteria framework

Criterion	Assessment focus	Score range
C1	Clarity of research objective	0-1
C2	Explicit turnover cost definition or operationalization	0-1
C3	Methodological transparency and replicability	0-1
C4	Validity and appropriateness of data sources	0-1
C5	Specificity of turnover cost identification or measurement	0-2
C6	Relevance to research questions (RQ1–RQ4)	0-2
C7	Acknowledgement of methodological limitations	0-1

Source: Authors

Studies were subsequently classified into quality tiers based on total assessment scores. Studies scoring 7-9 points were classified as high quality, studies scoring 5-6 points as moderate quality and studies scoring 3-4 points as lower-moderate quality but retained for conceptual or theoretical relevance. A detailed study-by-study quality assessment matrix is provided in Appendix A.

Following study selection and quality assessment, data were systematically extracted across several analytical dimensions, including author(s) and publication year, sector and research context, study type (empirical, conceptual, methodological or meta-analytic), turnover cost components examined, turnover cost estimation approaches applied, integration of HR analytics or technological tools, and major findings and methodological limitations.

2.3. Data Synthesis

The extracted studies were synthesized using a thematic analysis approach. Studies were grouped according to recurring themes including direct costs, indirect productivity costs, intangible costs, turnover-performance relationships, HR analytics integration and turnover cost estimation models.

Although 32 studies were included in the final review sample, not all studies contributed equally to the narrative discussion. Greater analytical emphasis was placed on studies demonstrating strong methodological rigor, conceptual relevance and explicit contributions to turnover cost measurement frameworks. Additional studies contributed primarily to thematic categorization, contextual comparison, and validation of emerging patterns across the literature. This synthesis approach enabled the identification of dominant methodological trends, recurring limitations and major research gaps in turnover cost estimation literature. The review further supported the development of an integrated interpretation of turnover costing approaches across human capital theory, organizational performance research, HR analytics and managerial accounting perspectives.

3. Literature Review

3.1. Theoretical Background

Human capital theory provides the foundational economic rationale for understanding employee turnover as a cost-bearing organizational phenomenon. According to Becker (1964), employees represent investments in knowledge, skills and competencies that generate future economic returns through training, experience and firm-specific learning. When employees leave, organizations lose not only recruitment and training investments but also accumulated organizational knowledge and productivity capacity. Strategic HRM has evolved toward sustainable approaches that explicitly account for long-term workforce capability preservation (Kramar, 2014). This issue is particularly significant in knowledge-intensive environments where firm-specific expertise contributes directly to competitive advantage. However, many turnover cost models continue to rely on static estimations and fail to capture the dynamic nature of human capital depreciation.

3.2. Evolution of Turnover Research

Employee turnover research has historically focused on psychological and behavioral antecedents such as job satisfaction, organizational commitment and leadership dynamics. Hom et al. (2017) argue that turnover literature has traditionally emphasized why employees leave rather than how turnover affects organizational costs and performance. The Resource-Based View further expanded turnover research by linking employee departures to strategic resource loss. Shaw et al. (2013) argue that skilled employees and embedded organizational knowledge represent strategic resources that generate competitive advantage. From this perspective, turnover represents not only labor replacement but also the erosion of firm-specific knowledge, relational capital and productivity synergies. Consequently, turnover is increasingly viewed as a strategic and financial risk rather than solely an HR issue.

3.3. Human Capital and Knowledge Loss

Human capital theory conceptualizes turnover as a value-destroying organizational event. Becker (1964) emphasizes the economic value embedded in employee skills and experience, while Ployhart et al. (2014) extend this perspective by conceptualizing human capital as an interconnected resource system where value emerges through employee interdependence and collective capabilities. Similarly, Dess and Shaw (2001) highlight the role of social capital disruption. Overall, the literature suggests that turnover costs extend beyond direct replacement expenses and include human capital depreciation, knowledge erosion and social capital disruption. However, integrated measurement approaches capable of capturing these dimensions remain limited.

3.4. Productivity and Organizational Performance

A substantial body of empirical research demonstrates a strong negative relationship between employee turnover and organizational performance. Meta-analytic evidence from Hancock et al. (2013) confirms that high turnover rates are associated with lower productivity, profitability and customer satisfaction across industries. At the collective level, Heavey et al. (2013) and Hausknecht and Trevor (2011) show that turnover disrupts coordination routines, weakens team-specific knowledge structures and creates systemic inefficiencies that extend beyond individual employee

replacement costs. Although some studies suggest that moderate turnover may introduce new perspectives and innovation potential, excessive turnover consistently produces negative effects on productivity, coordination, and long-term organizational performance.

3.5. HR Analytics and Cost Integration

The emergence of HR analytics has transformed workforce management from descriptive reporting toward predictive and data-driven decision-making. Marler and Boudreau (2017) describe HR analytics as a progression toward predictive and prescriptive workforce analysis, while Minbaeva (2018) highlights its strategic role in linking HR practices to organizational outcomes. However, several scholars identify important limitations. Angrave et al. (2016) argue that many HR analytics initiatives lack theoretical grounding and often prioritize technological capability over meaningful managerial insight. Similarly, Rasmussen and Ulrich (2015) emphasize that analytics only creates value when integrated into organizational decision-making systems. Efforts to connect workforce analytics with financial outcomes have been advanced by Levenson (2018) and Boudreau and Cascio (2017), who argue that HR metrics should be linked directly to productivity, profitability and organizational value creation. Additional studies by Tursunbayeva et al. (2021), van der Togt and Rasmussen (2017), and Fernandez and Gallardo-Gallardo (2021) demonstrate growing maturity in predictive HR analytics and workforce data systems. Despite these developments, integration between HR analytics and structured cost accounting methodologies remains limited. Although frameworks such as Time-Driven Activity-Based Costing (TDABC) provide mechanisms for measuring activity-based and time-driven costs, they are rarely integrated into turnover cost estimation research.

3.6. Labor Market Dynamics and the Great Resignation

Post-2020 labor market developments significantly intensified workforce mobility and reshaped turnover dynamics. The COVID-19 pandemic and the “Great Resignation” accelerated voluntary turnover across industries and increased managerial attention toward workforce instability.

Sull, Sull and Zweig (2022) identify toxic organizational culture as a major driver of turnover during this period, emphasizing factors such as weak leadership,

disrespectful environments and unethical practices. In contrast, Fuller and Kerr (2022) frame increased turnover as part of broader labor market transformations related to flexibility, work-life balance and changing employee expectations. According to Nica et al. (2024), sustainable human resource management fosters an environment of adaptability, which moderates the negative impact of employee turnover on long-term organizational performance. The growing integration of sustainability reporting frameworks into HRM practice (Ehnert et al., 2016) suggests that intangible turnover costs may increasingly require disclosure alongside financial metrics. Post-2020 literature increasingly conceptualizes turnover as a systemic and dynamic economic phenomenon. Sector-specific turnover dynamics, including those in healthcare organizations where green HRM and sustainability performance intersect (Mousa & Othman, 2020), remain underrepresented in the cost estimation literature. Remote work structures, digital collaboration systems and increased labor market fluidity have altered how turnover affects productivity, coordination and organizational stability, while also increasing the frequency of clustered turnover events and cumulative organizational costs. The reviewed literature identifies four dominant cost categories and five estimation approaches, examined in detail in the Findings section.

4. Findings Section

The systematic review of 32 peer-reviewed studies produced findings across four thematic domains, addressed in turn below against each research question.

4.1. Direct, Indirect and Intangible Cost Components (RQ1)

In answer to RQ1, the review found consistent identification of direct costs, while indirect and intangible costs remained substantially underrepresented in formal estimation models despite widespread recognition of their importance.

Direct costs - recruitment, selection, onboarding and initial training are the most consistently identified category across all study types. Cascio (2006) provides the most widely cited framework, decomposing replacement expenditures into vacancy management, hiring administration and early-tenure training. However, operationalization is inconsistent as Boushey and Glynn (2012) show that reported figures range from 16% to over 200% of annual salary, reflecting differences in cost

boundaries and measurement assumptions rather than genuine variation in underlying costs.

Indirect costs - productivity loss during vacancy, learning curve inefficiencies, supervisory diversion and knowledge erosion are consistently identified as the largest cost component in theory yet rarely operationalized through direct measurement. Hancock et al. (2013) and Heavey et al. (2013) confirm robust negative performance effects at aggregate and unit levels respectively, but studies consistently rely on salary multipliers or vacancy duration proxies rather than activity-based approaches. Argote (2013) notes that knowledge erosion is particularly resistant to quantification because organizational learning is a distributed phenomenon. Felps et al. (2009) adds a further dimension, turnover contagion, whereby departures trigger social network effects that accelerate subsequent voluntary exits, creating cumulative indirect costs that event-based models cannot capture.

Intangible costs - employer brand damage, innovation capacity decline and cultural deterioration are the most severely underrepresented category. No reviewed study operationalizes them through direct measurement. Hausknecht and Trevor (2011) demonstrate that collective turnover generates persistent performance volatility well beyond the replacement period. Shaw et al. (2013) show that intangible effects vary substantially with the strategic importance of departing employees, while Ployhart et al. (2014) argue that the true intangible cost is the disruption of the capability system, not merely individual knowledge loss. Post-2020, Sull et al. (2022) and Fuller and Kerr (2022) identify reputation damage and cultural deterioration as self-amplifying. Negative employer reputation raises future turnover risk, compounding intangible costs over time in ways no current model captures.

4.2. Dominant Methodological Approaches and Their Limitations (RQ2)

In answer to RQ2, multiplier-based heuristics dominate practice despite limited rigor, while theoretically grounded models remain confined to academic literature and are rarely operationalized.

Five estimation approaches were identified across the reviewed studies. The Human Capital Investment Model (Becker, 1964) is theoretically comprehensive but offers no operational measurement instrument. The Replacement Cost Model (Cascio, 2006) is the most widely used in practice, its dominance reflects ease of

implementation rather than completeness, as it excludes indirect and intangible costs entirely. The Opportunity Cost Model (Dess & Shaw, 2001) and Productivity Differential Model (Hancock et al., 2013; Kim & Ployhart, 2014) address broader cost dimensions but require longitudinal performance data most organizations do not hold. Multiplier-based heuristics typically 50–200% of salary remain the default tool despite Boushey and Glynn's (2012) demonstration that these figures lack empirical derivation. No study in the review corpus proposes a validated, activity-based instrument operationalizable for practitioner adoption, a gap consistent across the full fifteen-year review period.

4.3. Major Methodological and Conceptual Gaps (RQ3)

In answer to RQ3, the review identified five persistent and interrelated gaps, absence of standardized cost boundaries, dominance of static event-based models, systematic exclusion of intangible costs, limited cross-sector evidence and the absence of a validated integrated measurement framework.

The most fundamental gap is definitional, cost boundaries vary substantially across the 32 studies, making cross-study comparisons unreliable and preventing the accumulation of consistent empirical evidence. Static event-based modelling embedded in all five dominant approaches fails to capture the dynamic, cumulative effects documented by Felps et al. (2009), Heavey et al. (2013) and Nyberg and Ployhart (2013). Intangible costs are theoretically acknowledged but excluded from formal frameworks, a self-reinforcing pattern in which unmeasured costs are treated as unmeasurable. The literature is also heavily concentrated in large organizations in developed economies, limiting generalizability. Nica et al. (2024) and Sull et al. (2022) represent isolated attempts to broaden contextual coverage.

Most critically, no validated integrated framework exists capable of capturing direct, indirect and intangible costs within a single operationalizable structure. TDABC (Kaplan & Anderson, 2007) provides the technical tool for activity-based cost allocation but appears in the reviewed literature only as a theoretical possibility, never as an applied tool. The interrelationship among these five gaps is illustrated in Figure 2. Rather than isolated methodological shortcomings, they form a self-reinforcing cycle in which definitional inconsistency limits model development, static models exclude dynamic effects, exclusion of intangibles becomes normalized,

sector bias narrows generalizability, and the absence of an integrated framework sustains all four upstream gaps.

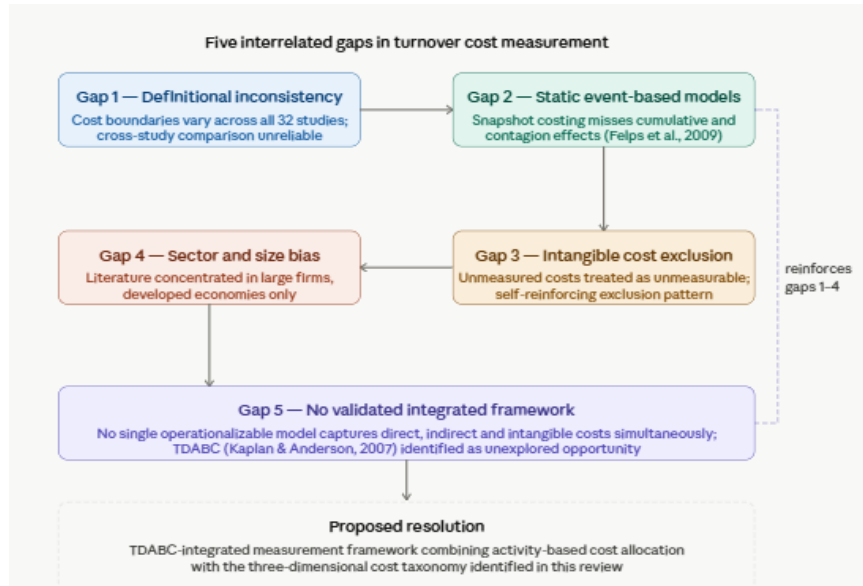


Figure 2. Interrelated gaps in turnover cost measurement

Source: Authors

4.4. HR Analytics and Technological Integration (RQ4)

In answer to RQ4, HR analytics maturity has advanced significantly over the review period, creating improved data infrastructure, but integration with structured cost accounting methodologies remains limited and largely theoretical.

Marler and Boudreau (2017), Minbaeva (2018), Levenson (2018), and Boudreau and Cascio (2017) collectively document a meaningful progression from descriptive workforce reporting toward predictive decision support, creating conditions for more rigorous cost measurement. Yet the reviewed studies consistently identify a gap between this potential and its realization. Angrave et al. (2016) argue that HR analytics initiatives prioritize technological capability over conceptual rigor. Rasmussen and Ulrich (2015) find that analytics creates value only when embedded in management decision-making systems and embedding that remains absent in the turnover cost measurement context. Fernandez and Gallardo-Gallardo (2021) identify structural adoption barriers including skill deficits and data governance

constraints. Tursunbayeva et al. (2021) add that data privacy and consent requirements further restrict the individual-level workforce data available for cost attribution.

5. Discussion

The findings of this review reveal a persistent paradox, turnover is widely recognized as a major financial cost, yet the measurement models available to organizations remain structurally inadequate. This section interprets the key findings against the theoretical frameworks introduced in Section 3 and identifies implications for research and practice.

5.1. The Measurement-Theory Gap

Theoretical frameworks such as human capital theory (Becker, 1964), the Resource-Based View (Shaw et al., 2013) and context-emergent turnover theory (Nyberg & Ployhart, 2013), collectively provide a sophisticated account of how turnover generates costs across direct, indirect and intangible dimensions. Yet measurement models in operational use remain anchored to observable direct costs, capturing at most 30–40% of the total economic impact documented in the empirical literature. Three structural reasons explain why this gap has not closed over the review period. First, a data availability problem, indirect and intangible costs require longitudinal performance data and knowledge attribution mechanisms that most HR systems do not collect (Levenson, 2018; Boudreau & Cascio, 2017). Second, an incentive problem, organizations are not penalized for underestimating costs that remain invisible, removing pressure for methodological improvement (Boushey & Glynn, 2012). Third, and most fundamentally, an integration failure, the disciplines best positioned to solve the problem, management accounting, HR analytics and organizational behavior have not converged on a shared framework (Angrave et al., 2016). Closing the gap requires not incremental model refinement but a structurally integrated approach that connects activity-based costing logic with the workforce data infrastructure HR analytics has made available.

5.2. Why Indirect and Intangible Costs Remain Excluded

For indirect costs, the core obstacle is attribution. Productivity losses are empirically documented at aggregate level by Hancock et al. (2013) and Heavey et al. (2013), but assigning a specific decrement to a specific departure requires role-level performance trajectory data that most organizations do not hold. Nyberg and Ployhart (2013) further explain that many indirect costs emerge at the system level from employee interdependencies, making them inherently resistant to event-based attribution.

For intangible costs, the barrier is partly technical and partly conventional. Management accounting lacks established protocols for valuing employer brand equity, tacit knowledge or cultural health, even where HR analytics has created proxies. Ployhart et al. (2014) argue these are legitimate organizational assets whose depreciation should be formally recognized, a position that has not yet entered standard practice. The post-2020 literature adds urgency, Sull et al. (2022) and Fuller and Kerr (2022) show that in high-turnover environments, intangible costs become self-amplifying through reputation damage and cultural deterioration, compounding the original event's financial impact in ways that event-based models cannot capture.

5.3. HR Analytics: Infrastructure Without a Bridge

HR analytics has advanced considerably over the review period, creating data infrastructure that could in principle support more rigorous turnover cost measurement (Marler & Boudreau, 2017; Minbaeva, 2018). Yet this infrastructure has not been connected to structured cost accounting. The two fields are developing in parallel, HR analytics has become sophisticated at predicting who will leave, but has not built validated approaches for quantifying what each departure costs. TDABC (Kaplan & Anderson, 2007) provides the technical tool for activity-based cost allocation, yet no study in the review corpus applies it to turnover costing.

5.4. Limitations

This review is subject to four methodological limitations that should be considered when interpreting its findings. First, although four major academic databases were searched, the selection excludes grey literature, doctoral dissertations and conference proceedings that may contain relevant methodological contributions. Second, the

restriction to English-language publications may systematically underrepresent turnover cost research conducted in non-Anglophone contexts, particularly in emerging economies where labor market structures and replacement cost dynamics differ substantially from those documented in the predominantly North American and Western European literature. Third, the 2010 start date, while justified by the emergence of HR analytics as a discipline and the post-GFC restructuring of turnover research means that foundational studies published prior to 2010 were retained selectively for theoretical grounding rather than through systematic review, introducing a potential inconsistency in how pre-2010 evidence is weighted. Fourth, the reviewed literature is subject to publication bias, studies documenting large, measurable turnover costs are more likely to be published and indexed than those reporting negligible or null cost effects, which may result in an upward bias in the estimated magnitude of turnover costs reported across the corpus. These limitations do not undermine the core findings of the review but should be considered when applying the identified cost frameworks and gap analyses to specific organizational or national contexts.

6. Future Research Directions

Future research on employee turnover cost estimation should focus on addressing the major methodological and conceptual gaps identified in the literature. First, there is a need for more standardized turnover costing frameworks, as existing studies use inconsistent definitions, cost boundaries and measurement assumptions, limiting comparability across studies and organizations. Future research should therefore develop more unified and activity-based measurement structures capable of capturing direct, indirect and intangible turnover costs in a consistent manner.

Second, stronger integration between HR analytics and management accounting methodologies remains necessary. Although recent advances in predictive HR analytics have improved workforce monitoring capabilities, these tools are rarely integrated with structured costing systems. Future studies should explore the application of Time-Driven Activity-Based Costing (TDABC) and related activity-based approaches to improve the precision of indirect and productivity-related turnover cost estimation.

Third, future research should further examine the relationship between turnover costs, organizational sustainability and ESG-related workforce indicators.

Integrating turnover metrics into sustainability and resilience frameworks may provide a broader understanding of long-term organizational performance and workforce stability.

Finally, future studies should move toward dynamic and predictive turnover costing models by incorporating real-time workforce data, machine learning techniques and digital HR systems. Overall, advancing turnover cost research requires greater integration between behavioral theory, human capital perspectives, HR analytics and structured cost accounting methodologies to support more comprehensive and operational turnover cost measurement systems.

7. Conclusion

This systematic literature review demonstrates that employee turnover cost estimation remains methodologically fragmented despite its growing strategic importance for organizations. The literature consistently identifies direct costs such as recruitment, selection, onboarding and training, however, indirect and intangible costs including productivity loss, knowledge erosion, coordination disruption and social capital loss, remain insufficiently measured and frequently underestimated. The review further reveals that multiplier-based heuristic approaches continue to dominate organizational practice despite limited empirical and theoretical support. As a result, many organizations are likely underestimating the full economic consequences of employee turnover. At the same time, the literature highlights important developments in HR analytics, workforce data systems and digital performance monitoring tools, which create new opportunities for more accurate and data-driven turnover cost estimation. Nevertheless, these technological developments remain weakly integrated with structured cost accounting methodologies.

Overall, this study contributes to the literature by synthesizing fragmented research streams, identifying major methodological limitations and advancing a more integrated and operational perspective on employee turnover costing. The findings reinforce the view that employee turnover should be understood not only as an HR issue but also as a multidimensional economic and strategic phenomenon requiring more comprehensive, activity-based and data-driven measurement approaches.

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Annex

Table 2. Summary of included studies (n = 32)

Author(s) & year	Sector / context	Study type	Cost components addressed	Method / approach	Key finding	Key limitation
Becker (1964)*	General / theoretical	Conceptual	Human capital depreciation	Human Capital Investment Model	Human capital investment generates future economic returns; turnover destroys accumulated value	Pre-2010; static; no operational measurement instrument
Dess & Shaw (2001)*	General / theoretical	Conceptual	Indirect: social capital, workflow disruption	Opportunity Cost Model	Voluntary turnover erodes social capital and organizational performance	Theoretical; no cost quantification instrument
Cascio (2006)*	General / practice	Practitioner commentary	Direct: recruitment, hiring, training	Replacement Cost Model	Turnover costs extend beyond direct expenses; earliest widely used practitioner framework	Excludes indirect and intangible costs; no empirical validation
Kaplan & Anderson (2007)	General / management accounting	Conceptual / applied	Indirect: activity-based time and resource costs	Time-Driven Activity-Based Costing (TDABC)	TDABC simplifies ABC by using time equations; enables granular activity-level cost attribution across departments	Not a turnover study; proposed here as methodological bridge to turnover cost estimate

Author(s) & year	Sector / context	Study type	Cost components addressed	Method / approach	Key finding	Key limitation
Felps et al. 2009)*	General / behavioral	Empirical	Indirect: turnover contagion costs	Social network / job embeddedness analysis	Turnover contagion via coworker job embeddedness; departures trigger cascading voluntary exits	Does not quantify financial costs of contagion
Hausknecht & Trevor (2011)	Multi-sector	Meta-analysis	Intangible: performance volatility and instability	Collective turnover analysis	Unit-level turnover generates persistent performance volatility well beyond the replacement period	Aggregate level; limited individual cost attribution
Argote & Miron-Spektor (2011)	General / operations management	Empirical	Indirect: knowledge sharing constraints and knowledge loss	Constrainting-factor model (MOA)	Knowledge sharing is constrained by the weakest of three factors (motivation, opportunity, ability); turnover disrupts all three simultaneously	Not a turnover cost study per se; no cost quantification; operations management framing
Boushey & Glynn (2012)	Multi-sector / policy	Policy analysis	Direct: replacement cost benchmarks	Multiplier heuristic critique	Multiplier figures (50–200% salary) lack empirical derivation; vary arbitrarily across sources	Grey literature; no peer-reviewed methodology
Hancock et al. (2013)	Multi-sector	Meta-analysis (82 studies)	Indirect: productivity, profitability	Productivity Differential Model	Strong negative relationship between	Aggregate; cannot isolate cost per

Author(s) & year	Sector / context	Study type	Cost components addressed	Method / approach	Key finding	Key limitation
			ty, customer satisfaction		turnover and firm performance confirmed across industries	individual turnover event
Heavey et al. (2013)	Multi-sector	Meta-analysis	Indirect: coordination disruption, team knowledge loss	Collective turnover analysis	Unit-level turnover disrupts coordination routines; collective costs exceed sum of individual replacements	Sector heterogeneity; no financial cost figures provided
Shaw et al. (2013)	Multi-sector	Empirical	Indirect & intangible: strategic resource erosion	Resource-Based View analysis	Turnover effects on strategic intangibles vary substantially with employee strategic importance	Sector and role specificity limits generalizability
Argote (2013)*	General / organizational learning	Conceptual	Indirect: knowledge retention and transfer costs	Organizational learning framework	Workforce instability disrupts knowledge transfer and long-term organizational capability; knowledge erosion resists quantification	No direct cost estimation; theoretical treatment only
Nyberg & Ployhart (2013)	General / theoretical	Conceptual	Indirect: human capital resource system disruption	Context-emergent turnover theory	Turnover costs emerge at system level from interdependent capabilities,	No empirical cost measurement; theoretical

Author(s) & year	Sector / context	Study type	Cost components addressed	Method / approach	Key finding	Key limitation
Kim & Ployhart (2014)	Multi-sector / longitudinal	Longitudinal empirical	Indirect: productivity before, during and after recession	Productivity Differential Model	not from individual loss alone Staffing and training investments affect firm productivity; turnover costs vary with economic cycle and organizational slack	1 framework only Productivity used as proxy; no direct cost calculation
Ployhart et al. (2014)	General / theoretical	Conceptual	Intangible : human capital resource system value	Human capital resources theory	Human capital value emerges from employee interdependence; intangible dimensions are legitimate assets requiring formal recognition	Conceptual; no measurement instrument provided
Kramar (2014)	General / sustainable HRM	Conceptual	Intangible : long-term workforce capability and sustainability costs	Sustainable HRM framework	Strategic HRM is evolving toward sustainable HRM that explicitly accounts for long-term workforce capability preservation and social responsibility	No turnover cost estimation; sustainability framing without financial measurement

Author(s) & year	Sector / context	Study type	Cost components addressed	Method / approach	Key finding	Key limitation
Rasmussen & Ulrich (2015)	General / HR analytics	Practice review	Methodological: analytics integration failure	Evidence-based HR framework	Analytics creates value only when integrated into management decision-making systems; embedding is the critical gap	No turnover cost application
Angrave et al. (2016)	General / HR analytics	Critical review	Methodological: analytics quality and grounding gaps	HR analytics critique	Many HR analytics initiatives prioritize technological sophistication over conceptual rigor and theoretical grounding	Critique without an alternative framework
Ehnert et al. (2016)	Multi-sector / sustainability	Empirical / comparative	Intangible: HRM sustainability reporting and workforce costs	Sustainability reporting analysis	World's largest companies increasingly report on HRM sustainability; intangible workforce costs including turnover remain underreported in formal disclosures	Reporting focus; no cost estimation model; cross-sector comparison limits depth
Cascio (2017)	General / HR practice	Conceptual	Direct: employer branding and retention	HR retention investment framework	Employer branding and HRD investments affect retention;	No turnover cost estimation instrument

Author(s) & year	Sector / context	Study type	Cost components addressed	Method / approach	Key finding	Key limitation
			investment costs		turnover cost linkage implied but not modelled	t; practitioner-oriented
Hom et al. (2017)	General / behavioral	Century review	Indirect: behavioral antecedents vs. cost focus gap	Turnover theory meta-review	100-year synthesis shows research prioritized why employees leave over financial cost consequences; cost measurement remains peripheral	No cost estimation; entirely behavioral focus
Marler & Boudreau (2017)	General / HR analytics	Systematic review	Indirect: analytics-enabled cost linkage potential	Evidence-based HR analytics review	HR analytics progresses from descriptive to predictive/prescriptive; integration with cost accounting remains limited	No turnover cost model; framework review only
Boudreau & Cascio (2017)	General / HR analytics	Conceptual	Indirect: productivity–finance linkage	Human capital analytics framework	HR metrics should link to productivity and value creation; implementation barriers persist in practice	Aspirational; no validated cost instrument
Van der Togt & Rasmuss	General / HR practice	Conceptual	Methodological: evidence-based HR	Evidence-based HR framework	Credibility infrastructure validated frameworks,	No cost estimation

Author(s) & year	Sector / context	Study type	Cost components addressed	Method / approach	Key finding	Key limitation
en (2017)			infrastructure gap		transparent methods required for evidence-based HR practice; not yet established	application
Minbaeva (2018)	General / HR analytics	Conceptual	Indirect: strategic analytics integration	HR analytics credibility framework	Credible analytics requires theoretical grounding and organizational embedding to generate actionable insights	No cost measurement application demonstrated
Levenson (2018)	General / HR analytics	Empirical / applied	Indirect: workforce analytics–strategy linkage	Workforce analytics application	Analytics improves strategy execution when linked to financial outcomes; data integration is key enabler	Applied focus; no specific turnover cost model
Mousa & Othman (2020)	Healthcare / green HRM	Empirical	Intangible: sustainable performance and workforce stability costs	Green HRM–sustainability linkage	Green HRM practices improve sustainable performance in healthcare; workforce stability and retention are identified as sustainability outcomes	Sector-specific (healthcare); no formal turnover cost model.
Tursunbayeva et	General / people analytics	Empirical / ethical	Methodological: data ethics	People analytics ethics	Privacy and consent requirements	Ethics focus; no cost

Author(s) & year	Sector / context	Study type	Cost components addressed	Method / approach	Key finding	Key limitation
al. (2021)			constraints on measurement	framework	constrain individual level workforce data scope available for cost estimation	measurement model
Fernandez & Gallardo - Gallardo (2021)	General / HR digitalization	Empirical	Methodological: analytics adoption barriers	HR digitalization analysis	Skill deficits, governance limitations and cultural resistance are primary structural barriers to HR analytics adoption	Structural barriers focus; no turnover cost model
Sull, Sull & Zweig (2022)	Multi-sector / Great Resignation	Empirical / survey	Intangible : employer reputation , toxic culture	Culture analytics (MIT/Glassdoor data)	Toxic organizational culture was the strongest predictor of voluntary turnover during 2021; culture damage compounds future turnover risk	No formal cost estimation; culture-to-cost linkage implied not quantified
Fuller & Kerr (2022)	Multi-sector / labour market	Conceptual / practitioner	Intangible : labour market transformation costs	Labour market trend analysis	Increased turnover predates COVID; driven by flexibility and work-life balance shifts across demographics.	No cost estimation model; descriptive framing

Author(s) & year	Sector / context	Study type	Cost components addressed	Method / approach	Key finding	Key limitation
Nica et al. (2024)	Multi-sector / sustainable	HRM Conceptual/theoretical	Indirect: adaptive capacity, resilience costs	Sustainable HRM framework	Adaptive HRM strategies moderate the negative performance impact of high turnover in volatile environments	No specific cost estimation instrument; strategic framing

Source: Authors