

Confirmation and Matching in Post-Trade Operations: Employee Perceptions of Settlement Risk Reduction at a Global Custodian

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Abstract - This study, undertaken during a six-week internship in the post-trade operations function of State Street Corporation, Bengaluru, examines the role of trade confirmation and matching in reducing settlement risk, and situates employee-level perception evidence within the broader regulatory and academic literature on post-trade operational risk. A structured five-point Likert questionnaire covering ten confirmation- and matching-related statements was administered to 150 employees drawn from Trade Operations, Middle Office, Back Office, Custody Services, Risk Management and other operational functions. A one-sample t-test confirms that the composite perception score ($M = 3.96$, $SD = 0.29$) is significantly above the neutral midpoint ($t = 40.146$, $p < 0.001$), indicating strong overall employee confidence that confirmation and matching reduce settlement risk. However, internal-consistency reliability of the ten-item scale was low (Cronbach's $\alpha = -0.046$), and neither Pearson correlation nor multiple regression ($R^2 = 0.015$, $F(6,143) = 0.371$, $p = 0.896$) found significant relationships among individual perception items, indicating that the items function as distinct judgements rather than a single unified attitude. One-way ANOVA found no significant difference in perception across departments ($F = 0.45$, $p = 0.812$) or years of experience ($F = 0.749$, $p = 0.525$), while the difference between male and female respondents approached but did not reach significance ($t = 1.847$, $p = 0.067$). The findings reveal a consistent "principle versus practice" gap: employees strongly endorse the conceptual importance of confirmation and matching but rate current matching timeliness, discrepancy resolution and system reliability more moderately. The study recommends prioritising matching turnaround time, strengthening exception-resolution workflows, continuing automation investment, and redesigning future perception instruments as validated, multi-dimensional scales.

Keywords: Settlement Risk, Confirmation and Matching, Post-Trade Operations, Operational Risk, Custodian Bank, Employee Perception.

1. INTRODUCTION

Every securities transaction executed in a financial market passes through a sequence of post-trade steps before ownership and cash actually change hands. Confirmation is the process by which two counterparties agree on and affirm the economic and settlement details of a trade, while matching is the subsequent reconciliation of those affirmed details against each other and against instructions lodged with custodians and central securities depositories, so that both sides agree before settlement is allowed to proceed. When either step breaks

down, through a data-entry error, a missed deadline, an unmatched instruction or a system outage, the trade risks failing to settle on the contractually agreed date, a condition the industry terms settlement risk, and in its more severe form, principal risk.

Settlement risk has drawn sustained regulatory and industry attention for over three decades, and the global shift toward shorter settlement cycles, such as T+1 in the United States and India, has compressed the window available to identify and resolve a confirmation or matching discrepancy, raising the operational premium on getting these processes right the first time. This study examines the role confirmation and matching play in reducing settlement risk, using the post-trade operating environment of State Street Corporation, a leading global custodian, as the empirical setting. It combines a review of the conceptual and regulatory literature on settlement risk with a primary survey of 150 employees engaged in trade operations, middle-office, back-office, custody-services and risk-management functions, and tests, using inferential statistics, whether employee perceptions of confirmation and matching are systematically related to perceptions of settlement-risk reduction.

A. Need for the Study

The global securities industry is shifting toward shorter settlement cycles, leaving less time to resolve confirmation and matching discrepancies, while penalty regimes such as Europe's CSDR attach a direct financial cost to settlement fails. Understanding how employees closest to this activity view current strengths and weaknesses is valuable both to the host organisation, in identifying areas for improvement, and to the literature, in grounding macro-level, market-wide statistics in micro-level, organisation-specific perception data.

B. Objectives of the Study

- To study the demographic profile of employees engaged in confirmation- and matching-related functions.
- To assess employee perceptions of the accuracy, timeliness and reliability of the confirmation and matching process.
- To examine the perceived influence of automation and technology on the speed and accuracy of confirmation and matching.
- To test the statistical relationship between confirmation/matching effectiveness and perceived settlement-risk reduction.
- To identify differences in perception across departments, experience levels and demographic groups.
- To recommend measures for strengthening confirmation and matching processes to further reduce settlement risk.

2. LITERATURE REVIEW

A substantial body of regulatory, industry and academic work bears on settlement risk and post-trade processing. The U.S. Securities and Exchange Commission's amendments to Rule 15c6-1 moved the standard U.S. settlement cycle from T+2 to T+1 and pushed broker-dealers toward same-day confirmation and affirmation arrangements [1], and a subsequent risk alert set out the supervisory expectation that firms complete confirmation and affirmation on trade date itself [2]. DTCC reported that same-day affirmation rates rose from roughly 73% in January 2024 to near 95% around the U.S. T+1 transition, while central-securities-depository fail rates remained broadly stable [3], and a joint SIFMA–ICI–DTCC after-action report corroborated this before/after transition performance [4]. In India, SEBI introduced optional T+1 settlement in 2021 [5] and a T+0 beta cycle in 2024 [6], while in Europe, CSDR attaches cash penalties and mandatory buy-ins to settlement fails, a regime whose proportionality has drawn industry pushback [7], [8].

The narrower peer-reviewed literature is thinner but methodologically instructive: operational-risk events in bank processing have been empirically linked to employee workload and process pressure [9], and a bibliometric review of operational-risk research finds that post-trade process risk specifically remains comparatively under-researched relative to credit and market risk [10]. Taken together, this literature converges on same-day, high-rate affirmation as the most consistently cited lever for settlement-risk reduction, but it is overwhelmingly macro-level, reporting affirmation rates and fail percentages aggregated across markets rather than examining how the employees who run confirmation and matching inside a specific custodian perceive the reliability and risk-reducing value of their own workflows.

Research Gap

Existing literature confirms that shortened settlement cycles and affirmation-rate targets are central to settlement-risk reduction, while consistently flagging timeliness, discrepancy resolution and automation as the operational levers involved. However, most available evidence is aggregate and market-wide, with comparatively little attention paid to employee-level perception within the operations teams of an individual custodian, or to whether such perceptions are statistically related to one another, or vary systematically across departments, experience and demographic groups. This study addresses that gap by combining primary survey data from 150 State Street employees with first-hand exposure gained during an internship in the organisation's post-trade operations function.

3. RESEARCH METHODOLOGY

A. Research Design

The study adopts a descriptive and analytical research design based on a quantitative approach. It is descriptive in profiling the demographic characteristics of respondents, and analytical in applying inferential statistical tests, one-sample and independent-samples t-tests, one-way ANOVA, Pearson correlation and multiple linear regression, to the primary survey data in order to test the stated hypotheses.

B. Population and Sample

The population comprises employees of State Street Corporation engaged in post-trade operational functions relevant to trade confirmation and matching. A sample of 150 employees was surveyed using non-probability convenience sampling, whereby a structured questionnaire administered as a Google Form was circulated to employees across Trade Operations, Middle Office, Back Office, Custody Services, Risk Management and other operational roles who were accessible to the researcher within the internship period.

C. Instrument and Data Analysis

Primary data were collected using a two-part structured questionnaire: Section A captured five demographic and professional variables (age, gender, educational qualification, years of experience and department), and Section B comprised ten statements measuring perceptions of confirmation and matching effectiveness and settlement-risk reduction, each rated on a five-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree). All 150 responses were complete, with no missing values. Data were analysed using Python's pandas, NumPy and SciPy libraries, computing frequency and percentage distributions, descriptive statistics, Cronbach's alpha, Pearson correlation, multiple linear regression, and formal hypothesis tests at $\alpha = 0.05$.

D. Hypotheses

- H1: The mean overall perception score does not significantly differ from the neutral midpoint (3.0).
- H2: There is no significant difference in mean perception scores across departments.
- H3: There is no significant difference in mean perception scores across years of work experience.
- H4: There is no significant correlation between perceived automation improvement and perceived error reduction.
- H5: There is no significant correlation between perceived delay-driven settlement risk and perceived confirmation/matching effectiveness.
- H6: There is no significant difference in mean perception scores between male and female respondents.

E. Limitations

The 150-respondent sample was drawn through non-probability convenience sampling and is confined to a single organisation, limiting generalisability; the cross-sectional design captures perception at a single point in time; and, as reported transparently in Section 4, the ten-item instrument's internal-consistency reliability was found to be low, which constrains confidence in the correlation and regression results specifically, though not in the composite and group-comparison findings.

4. RESULTS AND DISCUSSION

A. Respondent Profile

The 150-respondent sample skews early- to mid-career, with 65.4% of respondents aged 21–30 years and 67.3% reporting 1–6 years of experience, spread across the full chain of functions touching a trade (Table 1).

Table 1. Respondent Profile (N = 150)

Category	Dominant Group	Share
Age	26–30 years	36.7%

Category	Dominant Group	Share
Gender	Male	56.7%
Education	Bachelor's Degree	36.0%
Experience	1–3 years	34.0%
Department	Trade Operations	24.7%

Source: Primary data compiled by the researcher ($n = 150$).

B. Perception of Confirmation and Matching Effectiveness

Table 2 summarises the key perception indicators from the survey. All ten Likert items recorded means above the scale midpoint, with agreement strongest on statements linking delay to risk and effectiveness to failure reduction, and comparatively more moderate on items evaluating current operational execution such as matching timeliness and discrepancy resolution.

Table 2. Key Primary-Data Perception Indicators (N = 150)

Indicator	Value
Composite mean perception score (of 5)	3.96
Highest-rated item — "Delay increases settlement risk"	4.32
Lowest-rated item — "Matching completed within timelines"	3.61
Agree automation improved speed/accuracy	75.3%
Agree technology has improved the process	76.7%
Cronbach's alpha (10-item scale)	–0.046

Source: Computed by the researcher from primary survey data ($n = 150$).

C. Hypothesis Testing Results

The six hypotheses specified in Section 3 were tested at $\alpha = 0.05$ using one-sample and independent-samples t-tests, one-way ANOVA, and Pearson correlation (Table 3).

Table 3. Summary of Hypothesis Testing Results

Hypothesis	Statistic	p	Result
H1: Score vs. Midpoint	$t = 40.146$	<0.001	Rejected
H2: Score × Department	$F = 0.450$	0.812	Not rejected
H3: Score × Experience	$F = 0.749$	0.525	Not rejected
H4: Automation × Errors	$r = 0.007$	0.932	Not rejected
H5: Delay Risk × Effectiveness	$r = -0.057$	0.488	Not rejected
H6: Score × Gender	$t = 1.847$	0.067	Not rejected

The composite perception score is statistically significantly above the neutral midpoint (H1 rejected), confirming that

employees, on average, believe confirmation and matching are effective and reduce settlement risk. No significant differences were found by department (H2) or years of experience (H3), indicating this belief is broadly and evenly shared. Pearson correlations between automation and error reduction (H4) and between delay-driven risk and effectiveness (H5) were both non-significant despite each underlying item individually recording high mean agreement, and a supplementary multiple regression of overall effectiveness on six related items was also not significant ($R^2 = 0.015$, $F(6,143) = 0.371$, $p = 0.896$). The gender difference (H6) approached but did not reach conventional significance, with male respondents recording a marginally higher mean score.

D. Discussion

- Employees hold a clearly favourable overall perception of confirmation and matching effectiveness, with every individual item and the composite score above the neutral midpoint.
- A consistent "principle versus practice" gap emerges: conceptual statements linking delay to risk and effectiveness to failure reduction score highest, while operational-execution items such as timeliness, discrepancy resolution and system reliability score more moderately.
- The low internal-consistency reliability ($\alpha = -0.046$) and the absence of significant inter-item correlations indicate the ten statements function as distinct, situationally formed judgements rather than components of one unified attitude, a genuine measurement limitation rather than a substantive finding to be dismissed.
- Perceptions are broadly homogeneous across departments and experience levels, suggesting favourable views of confirmation and matching are widely shared across the organisation's post-trade functions rather than concentrated in one group.

E. Implications

Academic: The study extends the largely macro-level literature on settlement risk with employee-level, organisation-specific perception evidence, and cautions future researchers that strong individual-item agreement does not guarantee scale reliability or inter-item correlation.

Managerial: For State Street and similar custodians, employee confidence in the value of confirmation and matching is already high; the more actionable opportunity lies in closing the gap between that conviction and current timeliness, discrepancy resolution and system reliability.

Policy: The findings lend employee-level support to regulatory measures that shorten settlement cycles and mandate same-day affirmation, since staff on the ground independently endorse the same causal logic underpinning these interventions.

5. CONCLUSION AND RECOMMENDATIONS

This study examined the role confirmation and matching play in reducing settlement risk, using State Street Corporation as the empirical setting and primary survey data from 150 employees across its post-trade functions. Employees closest to the function believe strongly and consistently that it is vital to reducing settlement risk, a belief that is statistically significant and evenly shared across departments and experience. A more nuanced picture also emerges: employees are considerably

more confident in the underlying principle than in the current system's timeliness, discrepancy resolution and reliability, and the ten measured dimensions do not move together in a psychometrically consistent way, a genuine instrument limitation reported transparently rather than concealed.

Based on these findings, the study recommends: (a) benchmarking and improving matching turnaround times against industry same-day affirmation targets; (b) strengthening discrepancy and exception-resolution workflows, including staffing and escalation protocols; (c) continuing and expanding automation investment into remaining manual or semi-automated markets and products; (d) improving transparency of system-reliability reporting for front-line staff; and (e) redesigning future perception surveys as validated, multi-dimensional instruments with separately tested sub-scales. Pairing employee-perception data of this kind with actual settlement-fail and exception-ageing metrics is suggested as a direction for further study.

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