

## Treasury and Working Capital Risk Management in Debt-Financed Saudi Enterprises

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**Abstract:** Saudi enterprises with significant debt obligations encounter a complex treasury challenge: liquidity must sustain daily operations while guaranteeing debt-service capacity amid oscillating interest rates, payment delays, supply disruptions, and evolving refinancing conditions. This integrative review explores the combined governance of treasury and working capital risk management in debt-financed Saudi enterprises, moving beyond the traditional separation of these finance functions. Recent research on working capital, corporate liquidity, debt maturity, hedging, supply-chain finance, and Saudi corporate finance is synthesized using a risk-transmission framework. The findings indicate that cash conversion policy is most effective when managed as a resilience portfolio rather than through simple cycle minimization. Inventory buffers, receivable terms, supplier payments, committed liquidity, debt tenor, interest-rate exposure, covenant headroom, and cash reserves interact in nonlinear ways; enhancing one metric may undermine another if treasury decisions are made in isolation from operations. Saudi-specific evidence further demonstrates that financing constraints and macro-financial conditions influence the reliance on internal cash for investment. Additionally, recent studies highlight the significance of debt maturity, Sharia-compliant capital structures, and precautionary cash holdings. This paper develops an integrated treasury-working-capital risk architecture for Saudi firms, identifies control indicators for boards and treasury committees, and outlines research priorities related to covenant risk, cash-flow-at-risk, supply-chain finance, sukuk-linked liquidity, and sector heterogeneity. The central conclusion is that debt-financed enterprises should prioritize liquidity reliability, rather than solely accounting liquidity, by aligning operating-cycle cash, committed funding, and debt-service obligations within a unified, stress-tested governance framework.

**Keywords:** Treasury Risk, Working Capital, Debt Financing, Saudi Arabia, Liquidity Risk, Debt Maturity, Supply-Chain Finance, Cash Management.

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## 1. INTRODUCTION

Working capital and treasury are often organized as adjacent but distinct areas of corporate finance. Working capital management concentrates on inventories, receivables, payables, and the cash conversion cycle, whereas treasury concentrates on cash positioning, funding, interest-rate exposure,

bank relationships, liquidity facilities, and debt service. In a lightly leveraged company, this organizational separation may be manageable. In a debt-financed enterprise, however, the distinction can become economically artificial because delayed customer cash, excess inventory, supplier-payment decisions, refinancing dates, interest expense, and

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covenant thresholds all draw on the same liquidity capacity. The relevant unit of analysis is therefore not an isolated working-capital ratio or debt balance, but the firm's ability to transform operating assets into dependable cash before contractual funding obligations fall due.

Recent empirical research supports a move away from mechanical cycle reduction. Boisjoly, Conine, and McDonald (2020) show that long-run changes in receivable, inventory, payable, and cash-cycle practices have financial and valuation consequences, while Anton and Nucu (2021), Deari *et al.*, (2022), and Hung and Dinh (2022) document nonlinear relationships in which excessive or insufficient working-capital investment can harm profitability. Manufacturing evidence is similarly context-dependent: Amponsah-Kwatiah and Asiamah (2021) report positive performance associations for several working-capital components, whereas Yousaf, Bris, and Haider (2021) identify negative effects for longer component cycles in ordinary firms. The implication is not contradiction but conditionality. An enterprise must distinguish productive liquidity buffers from idle cash absorption and must evaluate working capital jointly with leverage, volatility, financing constraints, and operating criticality.

This issue is especially relevant to Saudi Arabia. Corporate expansion under diversification, localization, infrastructure development, tourism, logistics, manufacturing, and digital transformation can require substantial external finance before operating cash flows mature. Saudi studies show that financing constraints influence investment-cash flow sensitivity and become more binding when macro-financial conditions tighten (Guizani & Ajmi, 2020; Guizani, 2021). Alnori and Alqahtani (2019) also show that Sharia compliance influences leverage and adjustment behavior, while Alnori (2024) finds that leverage is materially associated with investment among listed Saudi non-financial firms. These findings make treasury design central to growth: debt can accelerate investment, but it also converts operating variability into scheduled cash claims.

The Saudi context adds further risk channels. Many firms operate across imported inputs, large project receivables, distributor credit, seasonal demand, commodity-linked costs, and concentrated customers or suppliers. Oil-related uncertainty can alter the precautionary value of cash even for manufacturing firms through energy prices, demand, and macro-financial conditions; international evidence demonstrates that cash reserves can mitigate negative oil-price uncertainty exposures (Wu, Wang, & Tong, 2021). Geopolitical uncertainty likewise strengthens precautionary cash motives,

particularly among financially constrained manufacturing firms (Lee & Wang, 2021). In such settings, liquidity is not merely the presence of current assets. It is the speed, certainty, and contractual availability with which those assets can be converted into cash without damaging operations.

This review therefore treats treasury and working capital as a single risk system for debt-financed Saudi enterprises. It differs from a conventional profitability-centered working-capital review through emphasizing downside transmission: how an operational delay becomes a borrowing need, how a borrowing need becomes refinancing or covenant exposure, and how treasury responses can either protect or destabilize the operating cycle. The structure follows the broad scholarly architecture of the supplied reference paper, including an explicit aim, objectives, methodology, thematic synthesis, integrated framework, implications, gaps, and conclusion. At the same time, the argument, evidence base, analysis, tables, and figures are independently developed.

## 2. AIM OF THE STUDY

The study aims to develop an evidence-based review framework for understanding and managing the interaction between treasury risk, working capital risk, and debt obligations in Saudi enterprises. It does not prescribe a universal cash conversion target; instead, it identifies mechanisms through which operating liquidity, debt structure, hedging, committed facilities, cash reserves, and supply-chain finance jointly determine resilience. The review also evaluates how findings from international corporate-finance research can be interpreted cautiously in the Saudi institutional and Sharia-sensitive financing environment.

## 3. RESEARCH OBJECTIVES

The review has five objectives. First, it evaluates recent evidence on working-capital efficiency, liquidity, and profitability, with particular attention to nonlinear and constraint-dependent effects. Second, it examines how debt maturity, refinancing exposure, interest-rate risk, and cash reserves interact with operating liquidity. Third, it analyzes receivable finance, factoring, reverse factoring, and broader supply-chain-finance mechanisms as risk-transfer tools. Fourth, it interprets Saudi empirical evidence on financing constraints, leverage, cash holdings, and Sharia-compliant capital structure. Fifth, it integrates these streams into a practical governance architecture for

treasury committees, finance leaders, boards, lenders, and future researchers.

#### 4. Research Questions

Four questions guide the synthesis. How should debt-financed Saudi firms distinguish efficient working-capital compression from liquidity policies that increase operational fragility? Which debt-maturity, cash-buffer, hedging, and committed-facility choices reduce the probability that an operating shock becomes a refinancing or covenant event? How can trade credit and supply-chain finance redistribute liquidity risk without simply shifting distress to weaker suppliers or customers? Finally, which governance indicators and research designs best evaluate integrated treasury-working-capital resilience in the Saudi corporate context?

#### 5. REVIEW METHODOLOGY

An integrative structured review was selected because the research question spans corporate finance, working capital, treasury, risk management, supply-chain finance, and Saudi capital-structure research. A narrowly quantitative meta-analysis would be inappropriate because the underlying studies use heterogeneous dependent variables, samples, countries, estimation methods, and definitions of liquidity. The review instead combines a transparent search and quality-assessment process with thematic and mechanism-based synthesis. The supplied paper was used only to understand broad organization and academic presentation; its specific claims, wording, evidence, tables, figures, and references were not reused.

Searches focused on Scopus- and Web of Science-relevant journal literature and were cross-checked through publisher pages and DOI records. Core search concepts included working capital management, cash conversion cycle, corporate liquidity, cash holdings, financial constraints, trade credit, supply-chain finance, factoring, reverse factoring, debt maturity, refinancing risk, interest-rate risk, corporate hedging, leverage, capital structure, Saudi Arabia, GCC, Sharia compliance, and investment-cash flow sensitivity. Boolean combinations linked operating-liquidity terms with debt and risk terms, and Saudi-specific searches were conducted separately to avoid allowing a large international literature to obscure local evidence.

The principal review window was 2020-2025 because the user requested recent evidence and because this period captures post-pandemic liquidity research, renewed supply-chain-finance scholarship, recent debt-risk studies, and current Saudi corporate-finance evidence. We retained a small number of earlier peer-reviewed studies where they provide a particularly important theoretical or

empirical bridge. Baños-Caballero, García-Teruel, and Martínez-Solano (2014) was retained for the optimal-working-capital argument; Chang (2018) for global cash-conversion evidence; and Alnori and Alqahtani (2019) for Saudi Sharia-compliance and capital-structure adjustment. The final bibliography contains exactly thirty peer-reviewed sources, with the clear majority published from 2020 onward.

Inclusion required direct relevance to at least one of four mechanisms: operating working capital, liquidity and cash buffers, debt structure and hedging, or supply-chain financing. Studies also had to provide identifiable journal publication details and a verifiable DOI. Saudi-focused studies were prioritized even when their dependent variables were investment, leverage, or cash holdings, because these variables illuminate the financing environment within which treasury decisions occur. Exclusion criteria removed non-peer-reviewed consultancy reports, purely descriptive webpages, duplicate versions, papers without a verified DOI, studies focused solely on financial institutions where balance-sheet mechanics differ substantially, and sources whose connection to enterprise treasury risk was remote.

Screening was qualitative rather than expressed through invented record counts. We assessed titles and abstracts for mechanism relevance, then checked full bibliographic records and, where accessible, publisher abstracts. Quality assessment considered journal standing, clarity of research design, sample appropriateness, treatment of endogeneity, measurement validity, and whether conclusions matched the evidence. Dynamic panel and quasi-experimental designs received greater causal weight than simple cross-sectional associations, while conceptual and qualitative studies informed mechanism development rather than causal claims. For example, supply-chain-finance theory from Kouvelis and Xu (2021) is interpreted as a model of incentive allocation, while Moretto and Caniato (2021) is used to identify crisis-era design directions rather than to estimate universal effect sizes.

Synthesis proceeded in three steps. First, the authors coded findings into risk channels: conversion risk, collection risk, inventory continuity risk, supplier-liquidity risk, funding risk, refinancing risk, rate risk, covenant risk, and precautionary liquidity. Second, the review compared where studies converged or diverged and identified moderators such as leverage, financial constraints, ownership, sector, shock conditions, and market access. Third, these mechanisms were mapped into an integrated treasury-working-capital architecture in which operating exposures feed a rolling liquidity view and

are matched against debt obligations, committed sources, hedges, and decision thresholds. No article-screening numbers are reported because the review did not maintain a reproducible bibliographic export suitable for a PRISMA-style count, and inventing such numbers would create false methodological precision.

Methodological limitations remain. Publication bias may favor significant working-

capital effects; national institutional differences constrain direct transfer to Saudi firms; accounting measures such as the cash conversion cycle can mask within-period volatility; and listed-firm research may underrepresent private and family businesses. Saudi evidence is growing but remains thinner than evidence from larger markets. Accordingly, the synthesis emphasizes mechanisms and testable propositions rather than universal numerical benchmarks.

**Table 1: Evidence synthesis domains and review logic**

| Domain               | Core risk question                                                  | Representative evidence                                                          | Saudi interpretation                                                             |
|----------------------|---------------------------------------------------------------------|----------------------------------------------------------------------------------|----------------------------------------------------------------------------------|
| Working capital      | When does cycle compression improve versus weaken resilience?       | Boisjoly <i>et al.</i> , (2020); Anton & Nucu (2021); Hung & Dinh (2022)         | Use segmented targets rather than a single CCC benchmark.                        |
| Debt and liquidity   | How do maturity and funding access transmit operating shocks?       | Chen <i>et al.</i> , (2021); Fu & Smith (2022); Alnori (2024)                    | Match contractual debt dates to stressed operating cash and committed liquidity. |
| Supply-chain finance | Who bears liquidity and counterparty risk after financing redesign? | Kouvelis & Xu (2021); Moretto & Caniato (2021); Kouvelis (2023)                  | Report SCF alongside other funding and monitor supplier resilience.              |
| Cash and uncertainty | When are precautionary buffers economically valuable?               | Lee & Wang (2021); Wu <i>et al.</i> , (2021); Al-Hamshary <i>et al.</i> , (2025) | Set minimum liquidity using stress scenarios and financing constraints.          |

## 6. Thematic Literature Review and Critical Analysis

### 6.1 Working Capital as a Liquidity-Risk Portfolio

The strongest contemporary evidence rejects a one-directional rule that shorter working capital is always superior. Boisjoly *et al.*, (2020) associate disciplined working-capital practices with stronger financial outcomes, but nonlinear studies show that the relevant objective is an optimum rather than a minimum. Anton and Nucu (2021) find a nonlinear relation for Polish listed firms; Deari *et al.*, (2022) report an inverted U-shape across European Union firms; and Hung and Dinh (2022) show that leverage can change the marginal effect of working-capital components on profitability. These results align with the earlier financial-constraint framework of Baños-Caballero *et al.*, (2014), in which constrained firms face a lower optimal investment in working capital because external finance is more costly.

For debt-financed Saudi enterprises, this literature implies that each component should be evaluated for both expected return and tail-risk protection. Inventory can absorb cash, yet critical inventory can prevent production stoppages that would interrupt debt-service cash flow. Receivables support commercial growth, yet weak credit discipline can transform reported revenue into borrowing demand. Payables conserve cash, yet indiscriminate extension can weaken strategic suppliers and increase disruption probability. Evidence is heterogeneous: Amponsah-Kwatiah and

Asiamah (2021) find several positive associations in Ghanaian manufacturing, Yousaf *et al.*, (2021) identify negative cycle effects in Czech firms, and Abdullah, Hashmi, and Iqbal (2022) show that ownership can moderate working-capital relationships. Morshed (2020) similarly emphasizes that financing and investment policies jointly shape the risk-return trade-off.

The treasury implication is to manage working capital by risk class rather than by aggregate days. The cash conversion cycle remains useful, but Chang's (2018) global evidence that its relationship with performance changes at low cycle levels cautions against aggressive compression. A Saudi engineering contractor with certified but slow project receivables, for example, faces different conversion risk from an FMCG producer with perishable inventories. Treasury should therefore add dispersion and concentration measures to average days: aging tails, top-customer exposure, disputed invoices, critical-stock coverage, supplier concentration, and forecast error. This converts working capital from an accounting optimization problem into a portfolio of cash-flow timing risks.

### 6.2 Receivables, Trade Credit, and Supply-Chain Liquidity

Trade credit is simultaneously a sales instrument, financing mechanism, and channel of counterparty risk. Shang (2020) shows that market liquidity influences firms' willingness to extend and use trade credit, indicating that trade-credit policy

depends on broader financing flexibility. Song, Yang, and Yu (2020) demonstrate that supply-chain networks and operational capabilities can signal creditworthiness and improve working-capital financing for SMEs. These findings matter in Saudi value chains where large anchor firms coexist with smaller suppliers whose financing costs and documentation capabilities may differ substantially.

Factoring and reverse factoring can shorten the time between sale and usable cash, but they do not eliminate risk; they redistribute it. Kouvelis and Xu (2021) show theoretically that the relative benefits of factoring structures depend on supplier credit quality and program design. Moretto and Caniato (2021) argue that supply-chain finance became more important under pandemic disruption but requires new technologies, actors, and risk-assessment approaches. Kouvelis (2023) goes further by redefining supply-chain finance as an integrated field connecting working capital, hedging, and risk management rather than a narrow receivables product.

For a debt-financed Saudi enterprise, supply-chain finance should therefore be evaluated against three tests. First is genuine liquidity creation: does the arrangement accelerate cash or merely lengthen another party's payment exposure? Second is resilience: does it stabilize critical suppliers under stress? Third is transparency: are accounting treatment, invoice authenticity, concentration, and contingent obligations visible to lenders and boards? Reverse factoring that preserves supplier economics can reduce disruption risk; aggressive payment extension supported by opaque programs can instead disguise leverage-like obligations. Treasury governance should therefore integrate supplier-finance exposure into debt and liquidity reporting rather than leaving it solely within procurement.

### 6.3 Debt Maturity, Refinancing, and Liquidity Buffers

Debt structure determines how operational volatility becomes financial distress. Ahangar (2021) links market liquidity to firms' use of short-term debt, while Chen, Xu, and Yang (2021) show that shorter maturity can amplify sensitivity of credit spreads to aggregate shocks. Fu and Smith (2022) emphasize that debt maturity, priority, and corporate liquidity are interdependent strategic choices. These studies support maturity matching but also show why a simple long-term-is-safer rule is incomplete. Long maturity reduces rollover frequency, yet can carry higher spreads, restrictive covenants, call

constraints, or fixed commitments that become expensive when business conditions change.

Saudi evidence strengthens the case for context-specific maturity design. Guizani and Ajmi (2020) find that tighter financial conditions increase Saudi firms' reliance on internal cash for investment, and Guizani (2021) reports greater investment-cash flow sensitivity among more constrained firms. Alnori (2024) finds that leverage is positively associated with corporate investment in Saudi listed firms, suggesting that debt can support expansion rather than merely discipline managers. The treasury risk is therefore not debt itself but an obligation profile that outruns the reliability of operating cash and refinancing access.

A practical maturity ladder should distinguish operating revolvers, import and trade facilities, amortizing term debt, leases, sukuk or bond obligations, and development-related facilities. The governing question is whether forecast free cash after minimum operating liquidity can cover scheduled debt service under plausible adverse scenarios. Firms should therefore monitor maturity concentration, committed versus uncommitted facilities, covenant headroom, undrawn liquidity, collateral availability, and refinancing lead time. This approach shifts attention from average cost of debt to liquidity at risk around contractual dates.

### 6.4 Cash Reserves, Financial Constraints, and Uncertainty

Cash is often criticized as a low-return asset, but its value rises when external financing is constrained or shocks correlate with borrowing conditions. Lee and Wang (2021) find that geopolitical risk increases precautionary cash holdings, particularly for constrained and manufacturing firms. Wu *et al.*, (2021) show that cash can mitigate negative exposure to oil-price uncertainty and is more valuable under tighter financial constraints. Saudi evidence from Al-Hamshary *et al.*, (2025) similarly links corporate risk-taking, financial constraints, and cash holdings, demonstrating that local cash policy cannot be understood independently from access to finance.

The critical distinction is between idle cash and strategic liquidity. A debt-financed enterprise can hold little cash if it has highly reliable collections, substantial committed facilities, low covenant sensitivity, diversified banks, and flexible capital expenditure. Conversely, a business with volatile project receipts, seasonal imports, concentrated lenders, or near-term maturities may rationally hold a larger buffer. Treasury policy should therefore define a minimum liquidity reserve as cash plus immediately drawable committed capacity, adjusted

for operational restrictions and covenant conditions. The target should be stress-based, not a fixed percentage of revenue.

### 6.5 Interest-Rate, Hedging, and Capital-Structure Risk

Debt-financed working capital exposes firms to price and quantity risk: even if funding remains available, its cost can change sharply. Hahnenstein, Köchling, and Posch (2021) provide evidence that firms hedge to reduce expected distress costs, while Jiang (2021) shows that financial hedging interacts with diversification and liquidity rather than operating as an isolated tool. Biguri, Brownlees, and Ippolito (2022) find that corporate hedging reduces firm risk and has implications for investment and liquidity management. These studies imply that treasury hedging should be judged by its contribution to cash-flow stability and debt-service capacity, not by whether derivatives produce accounting gains in a particular period.

Capital-structure characteristics also matter in Saudi Arabia. Alnori and Alqahtani (2019) find that Sharia-compliant firms use lower leverage and adjust more slowly toward targets, reflecting compliance-related financing constraints. Makni and Dinga (2020) find nonlinear debt-value relationships in Saudi listed firms, cautioning against simplistic leverage prescriptions. For firms using Islamic facilities, sukuk, murabaha, ijara, or conventional loans, economic risk should therefore be compared on a common treasury basis: payment timing, repricing frequency, refinancing dependence, security, covenants, prepayment flexibility, and documentation triggers.

The integrated lesson is that treasury risk cannot be reduced to hedging interest rates while ignoring operating cash. Rate hedges are most valuable when combined with reliable cash forecasts, maturity ladders, covenant surveillance, and working-capital actions. A firm that fixes its borrowing cost but allows receivables to age uncontrollably has hedged price risk while leaving funding-quantity risk untouched. Conversely, a firm that compresses working capital aggressively but relies on short uncommitted debt remains exposed to rollover risk. The strongest architecture therefore links operating conversion, liquidity buffers, debt maturity, and hedging decisions in one governance cycle.

## 7. DISCUSSION

The reviewed evidence supports three central interpretations. First, liquidity resilience is an optimization problem under constraints, not a ratio-minimization problem. Nonlinear working-capital findings across multiple settings indicate that both

underinvestment and overinvestment can destroy value. This matters more under debt because the cost of a working-capital mistake is asymmetric: excess inventory may reduce returns gradually, while a missed collection before a debt-service date can trigger emergency borrowing, covenant pressure, or payment disruption. Treasury therefore needs measures of timing reliability in addition to balance-sheet quantities.

Second, operating and financing risks form a transmission chain. A customer delay increases receivables; the cash shortfall increases facility utilization; higher utilization reduces covenant headroom and undrawn liquidity; a simultaneous rate or refinancing shock then raises debt-service pressure. The reverse chain can also occur: short maturities or tight covenants can push management to cut inventory or stretch suppliers, increasing operational fragility. This feedback explains why apparently efficient policies can become destabilizing when optimized in silos.

Third, the Saudi setting requires adaptation rather than direct importation of international benchmarks. Local studies demonstrate financing constraints, leverage-investment links, Sharia-related capital-structure differences, and precautionary cash behavior. The appropriate framework is therefore principle-based: match funding tenor to cash-flow duration, preserve minimum stressed liquidity, segment working-capital exposures by economic criticality, diversify funding sources where feasible, and define pre-agreed triggers for collections, inventory, facility drawdown, hedging, and refinancing.

Figure 1 summarizes the proposed risk-transmission architecture. Operating exposures are converted into a rolling cash forecast, which is tested against debt-service obligations and liquidity resources. Governance thresholds then determine whether management should change working capital, draw facilities, refinance, hedge, or defer discretionary cash uses. Figure 2 complements this architecture with a layered control cycle that distinguishes leading indicators from outcome ratios. The framework is deliberately non-numeric because appropriate limits vary by sector, leverage, customer concentration, seasonality, and facility structure.

Stress testing bridges measurement and action. A treasury committee should not test only a generic percentage decline in sales; it should translate realistic events into dated cash consequences. Relevant scenarios include a major customer paying thirty days late, a shipment delay requiring emergency inventory purchases, a supplier shortening credit terms, a floating-rate facility

repricing upward, a covenant calculation weakening after an earnings shock, or a refinancing transaction being postponed. Each scenario should show daily or weekly minimum cash, facility utilization, covenant headroom, and management actions. Combined scenarios are especially important because liquidity crises rarely arrive as a single isolated variable. Panda, Nanda, and Panda (2021) show that macroeconomic conditions influence the working-capital-profitability relationship for SMEs, reinforcing the need to connect internal operating assumptions with external financial conditions. Management responses should be ranked by reversibility and strategic cost. Accelerating collections, postponing discretionary expenditure, drawing committed lines, using receivables finance, adjusting hedges, and refinancing early generally

preserve more enterprise value than emergency inventory liquidation or indiscriminate supplier stretching. The committee should also define decision rights before stress occurs. Treasury may own funding and hedging, but sales must own collection assumptions, procurement must own supplier commitments, operations must own critical-stock requirements, and executive management must approve actions that alter strategic capacity. A documented escalation ladder prevents delay caused by unclear authority. Finally, the board should review not only whether the firm survived each scenario but which assumptions caused the largest liquidity deterioration. That learning loop turns stress testing from a compliance exercise into a way to improve forecasts, contractual terms, funding diversity, and operational resilience over time across cycles.

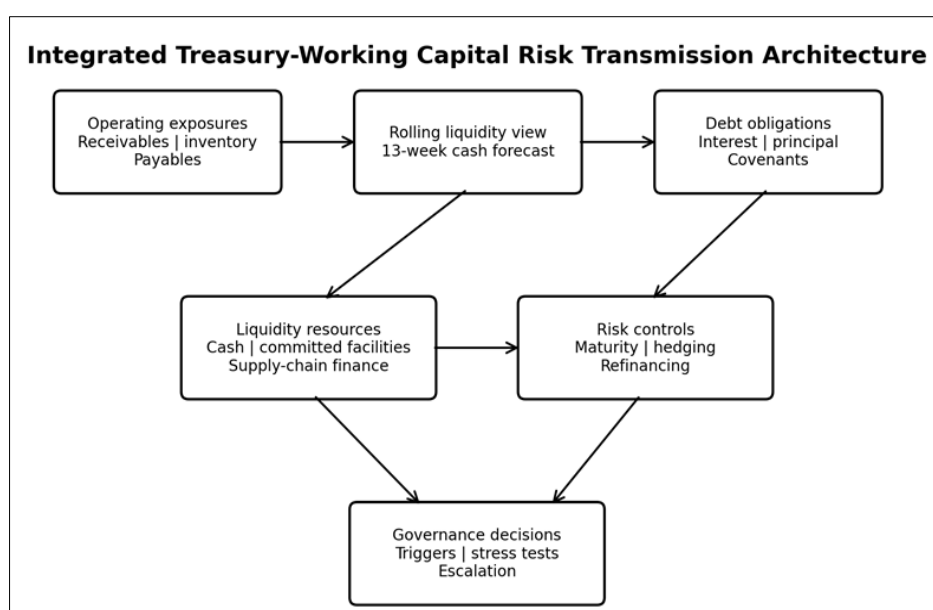


**Figure 1: Integrated treasury-working capital risk transmission architecture**

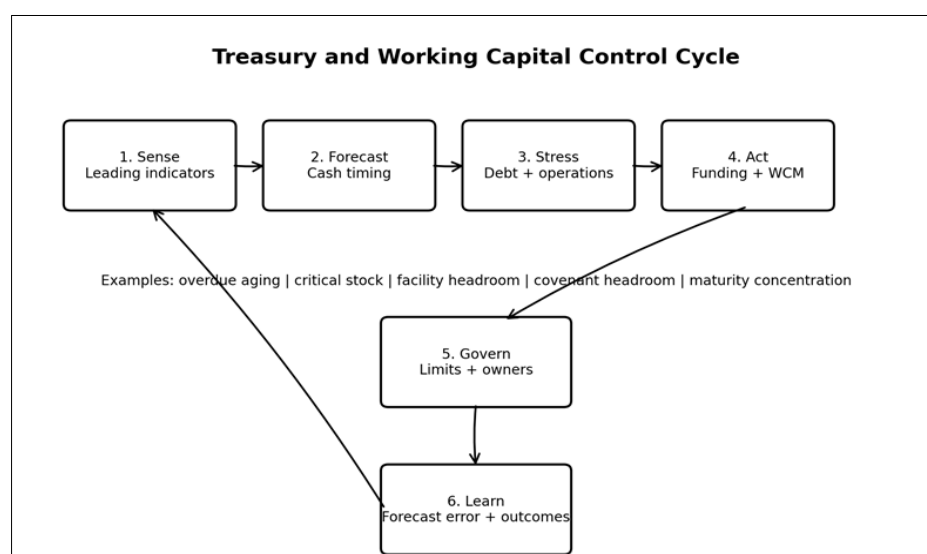


**Figure 2: Treasury and working capital control cycle**

## 8. Research Gaps and Future Research

Saudi corporate-finance research has not yet fully integrated treasury variables with detailed working-capital data. Future studies should combine daily or weekly cash forecasting accuracy, receivable aging, inventory criticality, supplier concentration, facility utilization, covenant headroom, debt maturity, and hedging positions. This would allow researchers to test whether working-capital optimization improves resilience only when committed liquidity is sufficient.

A second gap concerns causal evidence on supply-chain finance. Research should compare Saudi firms adopting factoring, reverse factoring, receivables discounting, and digital invoice finance with matched non-adopters, measuring both buyer liquidity and supplier health. Third, Sharia-compliant financing deserves treasury-level analysis beyond leverage ratios, including repricing, payment schedules, collateral, covenant design, and refinancing flexibility. Fourth, sector heterogeneity should be explicit: construction, manufacturing, retail, healthcare, logistics, and technology have fundamentally different conversion and debt-service patterns. Finally, cash-flow-at-risk and liquidity-at-risk models could be tested as predictors of covenant breaches, refinancing stress, and investment cuts, creating a stronger bridge between treasury practice and academic corporate-finance research.

## 9. Practical, Managerial, and Policy Implications

For chief financial officers and treasurers, the central recommendation is to operate a single liquidity governance process. A rolling forecast

should combine customer collections, supplier commitments, payroll, tax, capital expenditure, facility interest or profit payments, principal maturities, and covenant tests. Track forecast accuracy by source, because systematic optimism in sales or collections is itself a risk indicator. Minimum liquidity should include only cash and committed facilities that are genuinely accessible under stress.

Working-capital actions should be segmented. Protect critical inventory with service and lead-time metrics; subject noncritical slow stock to disposal or purchasing controls. Customer limits should reflect probability and timing of collection, not only sales value. Supplier terms should incorporate supplier resilience, especially where localization or single-source dependencies matter. Supply-chain-finance programs should be reported alongside debt-like exposures so that boards can see the economic financing position.

Boards should require a compact dashboard covering stressed liquidity coverage, thirteen-week forecast error, overdue receivables, critical inventory coverage, top-customer concentration, supplier concentration, committed-facility headroom, covenant headroom, weighted debt maturity, refinancing concentration, and fixed/floating or hedged exposure. Policy makers and lenders can reinforce this discipline by encouraging standardized digital invoicing, transparent receivables finance, diversified corporate debt markets, and treasury capability building for SMEs. Such measures improve financing quality only when firms also strengthen internal data and governance.

**Table 2: Board-level treasury and working-capital risk dashboard**

| Indicator                             | Risk signaled                | Preferred interpretation                                            | Example management trigger                                               |
|---------------------------------------|------------------------------|---------------------------------------------------------------------|--------------------------------------------------------------------------|
| 13-week forecast accuracy             | Timing uncertainty           | Bias by source matters more than a single aggregate error           | Escalate repeated collection or purchasing bias.                         |
| Overdue receivables and concentration | Collection/counterparty risk | Aging tails and concentration can outweigh average DSO              | Tighten limits, escalate collections, consider receivables finance.      |
| Critical inventory coverage           | Continuity risk              | Low days are not efficient if service-critical inputs are exposed   | Replenish or diversify supply before minimum cover is breached.          |
| Committed liquidity headroom          | Funding quantity risk        | Only drawable committed capacity is a reliable buffer               | Refinance or preserve cash before headroom falls below policy floor.     |
| Covenant headroom                     | Contractual funding risk     | Headroom should be stress-tested, not monitored only at quarter-end | Freeze discretionary uses and engage lenders before threshold proximity. |
| Debt maturity concentration           | Refinancing risk             | Large clustered maturities create event risk                        | Begin refinancing well before concentration window.                      |

## 10. Limitations

This review synthesizes heterogeneous empirical and conceptual studies and therefore does not estimate a pooled effect size. International findings may not transfer directly to Saudi legal, banking, ownership, and Sharia-compliance settings. Listed-company evidence may overstate treasury sophistication relative to private firms and SMEs. Accounting working-capital measures are also coarse proxies for intra-period cash volatility. Finally, the review emphasizes verified peer-reviewed literature and therefore does not incorporate many useful practitioner surveys or current institutional program documents. These limitations support cautious, mechanism-based interpretation rather than numerical prescriptions.

## 11. CONCLUSION

Treasury and working capital risk management should be treated as one financial-resilience system in debt-financed Saudi enterprises. The literature does not support a universal instruction to minimize inventories, receivables, cash, or debt maturity. Instead, it shows that optimal working capital depends on financing constraints, leverage, sector characteristics, market access, and uncertainty. At the same time, debt design determines whether ordinary operating variability becomes a refinancing or distress event.

The practical objective is liquidity reliability. Firms should understand which inventories protect continuity, which receivables are genuinely convertible into cash, which supplier terms preserve the operating ecosystem, which facilities remain drawable in stress, and which debt obligations concentrate cash demands. Interest-rate hedging, cash buffers, factoring, reverse factoring, and Sharia-compliant instruments are valuable only when incorporated into this wider architecture.

For Saudi enterprises pursuing growth, debt can support investment and strategic transformation, but it increases the importance of disciplined conversion and treasury governance. An integrated framework built around rolling cash forecasts, maturity ladders, covenant headroom, committed liquidity, segmented working capital, and stress testing provides a stronger basis for resilience than isolated ratio targets. Future Saudi research should test these mechanisms with higher-frequency treasury data and sector-specific designs. The central proposition is straightforward: sustainable leverage requires an operating cash system capable of meeting contractual obligations not only in the expected case, but also when collections slow, costs rise, suppliers tighten terms, or refinancing conditions deteriorate. This reinforces a principle for treasury governance: decisions should be based on cash timing, contractual

certainty, and downside capacity rather than isolated accounting averages. Managers should document assumptions, assign owners to each liquidity driver, review exceptions promptly, and escalate deviations before they become funding emergencies. This discipline makes working capital, debt structure, and risk management mutually reinforcing components of enterprise resilience.

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