

Operations Management and Supply Chain Resilience in Global Oil Tanker and Carrier Vessel Operations: Analysing the 2025–2026 Israel–Iran Conflict, Strait of Hormuz Disruptions, Global Oil Price Escalation, and India’s Strategic Response

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Abstract: *The geopolitical escalation stemming from the 2025–2026 Israel–Iran armed conflict has precipitated an unprecedented disruption to global maritime oil supply chains. The closure and severe restriction of the Strait of Hormuz — through which approximately 20 million barrels of crude oil and petroleum products transited daily in pre-conflict conditions, representing nearly 27% of global seaborne oil trade — has generated what the International Energy Agency characterised as the greatest global energy security challenge in history. Brent crude futures surged from pre-conflict levels of approximately USD 70 per barrel to near USD 150 per barrel by early April 2026, with physical crude benchmarks touching record highs. This paper examines the operational and supply chain management dimensions of this crisis, with particular focus on Very Large Crude Carrier (VLCC) and oil tanker operations, route rerouting decisions, war-risk insurance dynamics, fleet management constraints, and cargo delivery continuity. The paper further analyses the macro-supply-chain consequences for global oil markets and provides a structured analytical perspective on India’s strategic response as the world’s third-largest crude oil importer. Drawing upon frameworks including the Total Cost of Ownership (TCO) model, the SCOR framework, and the Risk-Resilience-Recovery (3R) model, this paper provides academically grounded, operationally actionable recommendations for navigating geopolitical maritime disruptions.*

Index Terms — *Operations Management, Supply Chain Resilience, Oil Tanker Logistics, Strait of Hormuz, VLCC Operations, Israel–Iran Conflict 2026, India Energy Security, Maritime Supply Chain, War-Risk Insurance, Route Diversification, Oil Price Shock, SCOR Framework.*

I. INTRODUCTION

The global petroleum supply chain has long been susceptible to geopolitical perturbations, but the events commencing on 28 February 2026 — when coordinated airstrikes were launched on Iran under Operation Epic Fury — introduced a qualitatively different order of disruption. Unlike previous crises involving piracy, localised conflict, or port closures, the 2026 Strait of Hormuz crisis effectively severed the single most critical maritime energy chokepoint on Earth, one that handles approximately 20 million barrels per day (mbpd) of crude oil and petroleum products alongside roughly one-fifth of global liquefied natural gas (LNG) trade.

From an operations management standpoint, the crisis immediately impacted: (a) vessel routing decisions and fleet deployment; (b) war-risk insurance and freight rate structures; (c) inventory management and safety stock levels for import-dependent economies; (d) supply chain network design under extreme uncertainty; and (e) vendor and supplier selection across global refining systems. The effects were not contained to direct transit nations. The systemic nature of global value chains means that disruptions propagate upstream and downstream across industries that ostensibly have no direct connection to oil tanker routes.

India’s case demands particular analytical attention. As the world’s third-largest crude oil importer — consuming approximately 5.5 mbpd and importing more than 85% of its requirements — India’s energy security architecture is structurally exposed to Hormuz-contingent risk. Simultaneously, India’s declared foreign policy of strategic autonomy places it in the complex position of managing bilateral channels with Iran for safe passage while navigating U.S. sanctions architecture. This paper examines these dimensions through the lens of operations management and supply chain theory, while remaining analytically neutral on the political dimension of the conflict itself.

II. BACKGROUND AND CONTEXT: THE STRAIT OF HORMUZ AS A SUPPLY CHAIN CHOKEPOINT

A. Operational Significance of the Strait

The Strait of Hormuz, a narrow waterway approximately 33 nautical miles wide at its narrowest point between Oman and Iran, constitutes the world’s most operationally critical maritime oil transit corridor. During calendar year 2024, the U.S. Energy Information Administration (EIA) documented approximately 20 mbpd of crude oil, condensate, and petroleum products transiting the strait. This volume represented nearly 27% of global maritime oil

trade and approximately 20% of total world petroleum liquids consumption. In LNG terms, roughly 20% of global LNG shipments — predominantly from Qatar — were routed through the corridor. Of the crude oil transiting the strait, 84% was destined for Asian markets, with China, India, Japan, and South Korea collectively accounting for the largest share of these flows.

From a supply chain network topology perspective, the Strait of Hormuz functions as a single-node bottleneck in a multi-origin, multi-destination global oil network. The structural risk this creates — well documented in supply chain resilience literature under the concept of ‘network vulnerability’ — is that a disruption at this single node can cascade across the entire system regardless of how distributed production sources are. This is the operational paradox at the heart of global oil supply chain design: despite sourcing from over 40 countries, import-dependent nations face near-total exposure when the downstream transit node fails.

B. Pre-Crisis Fleet Operations and Tanker Dynamics

Very Large Crude Carriers (VLCCs), which typically carry between 2 and 3 million barrels of crude oil per voyage, form the operational backbone of Persian Gulf oil exports. In normal operating conditions, VLCCs transiting the Strait of Hormuz follow established Traffic Separation Schemes (TSS) permitting southbound and northbound lanes of approximately 2 nautical miles each. Daily traffic through the strait typically included approximately 17–21 laden tankers and an equivalent number returning in ballast.

The pre-conflict operational regime involved a well-calibrated ecosystem of charter agreements (voyage charter, time charter, and bareboat charter structures), established war-risk insurance brackets, standardised Port State Control inspections, and predictable freight rate benchmarks published by the Baltic Exchange. The war-risk insurance premium for the strait stood at approximately 0.125% of the insured vessel value per transit — a figure that would see dramatic upward revision as the crisis intensified.

III. OPERATIONAL CRISIS TIMELINE: FEBRUARY–APRIL 2026

A chronological mapping of key operational events provides essential grounding for the supply chain analysis that follows. Table I presents the major milestones from the onset of the crisis through the ceasefire period.

Table I: Key Operational Events of the 2026 Strait of Hormuz Crisis

Date	Operational Event
15–20 Feb 2026	Iran increases oil export rates threefold and reduces stored inventories as a pre-conflict buffer. War-risk insurance premiums begin rising from 0.125% to 0.2–0.4% per transit — a cost increase of approximately USD 250,000 per VLCC passage.
28 Feb 2026	Operation Epic Fury launched. Iran retaliates, effectively restricting Strait of Hormuz transit. Major shipping companies including Maersk, CMA CGM, and Hapag-Lloyd suspend strait transits.
4 Mar 2026	Strait of Hormuz formally closed to most commercial traffic. Brent crude surges past USD 120/bbl. QatarEnergy declares force majeure on all LNG export contracts. IEA describes the crisis as the “greatest global energy security challenge in history.”
9 Mar 2026	India issues Natural Gas Control Order under the Essential Commodities Act. Government establishes 24×7 petroleum inventory monitoring control room. 28 Indian-flagged vessels with 778 Indian seafarers operating in the region.
14–24 Mar 2026	Five Indian-flagged LPG carriers evacuated from the Strait of Hormuz on three separate occasions under Operation Sankalp, escorted by Indian Navy warships through the Gulf of Oman.
26 Mar 2026	Iran grants preferential passage to vessels owned by five nations: China, Russia, India, Iraq, and Pakistan. Indian-flagged carriers resume limited transits following bilateral diplomatic engagement.
7 Apr 2026	Two-week ceasefire announced. Physical crude prices surge to near USD 150/bbl — record levels. Strait throughput averaged only 3.8 mbpd versus 20 mbpd pre-crisis.
11 Apr 2026	U.S. waiver permitting India’s purchase of Russian crude expires, compounding India’s supply squeeze. North Sea Dated crude trading around USD 130/bbl — approximately USD 60/bbl above pre-conflict levels.
17 Apr 2026	Iran announces strait open to commercial ships during ceasefire, but conditions remain disputed. U.S. naval blockade of Iranian ports in effect. Tanker gridlock persists with severely restricted throughput.

IV. OPERATIONS MANAGEMENT ANALYSIS: TANKER AND CARRIER OPERATIONS

A. Voyage Rerouting: The Cape of Good Hope Alternative

The suspension of Hormuz-routed transits immediately triggered a forced reconfiguration of global tanker routing. Vessels that would ordinarily have transited from Gulf loading ports such as Ras Tanura (Saudi Arabia), Jebel Ali (UAE), or Mina Al Ahmadi (Kuwait) were compelled to consider two primary alternatives.

First, utilisation of overland pipeline infrastructure: Saudi Arabia’s East–West Pipeline (Petroline) and the Abu Dhabi Crude Oil Pipeline (ADCOP) offered limited relief, with combined alternative export capacity approximately 7–8 mbpd against pre-crisis throughput of 20 mbpd. These were operationally constrained by terminal capacity at

Yanbu (Red Sea) and Fujairah (Arabian Sea coast), respectively. Iraq's Kirkuk–Ceyhan pipeline provided additional but limited relief.

Second, cargo rerouting via Cape of Good Hope: rerouting around Africa's southern tip added approximately 15–20 additional sailing days and 6,000–8,000 additional nautical miles per voyage. At VLCC consumption rates of approximately 90–100 metric tonnes of bunker fuel per day at laden speed, this represents an additional fuel cost of USD 1.5–2.5 million per voyage — in addition to the extended voyage duration consuming the vessel's time charter equivalent value. The Cape rerouting decision involves a multi-criteria trade-off across additional fuel costs, vessel utilisation efficiency, contractual obligations under existing charter parties, and the opportunity cost of delayed cargo delivery.

B. War-Risk Insurance and Freight Rate Dynamics

The insurance architecture governing vessel operations in conflict zones underwent radical repricing. War-risk insurance premiums increased from the pre-crisis benchmark of 0.125% of hull value per transit to 0.2–0.4% per transit by late February 2026. For a VLCC with a hull value of approximately USD 100–120 million, this translates to a per-voyage war-risk premium of USD 200,000–480,000 — effectively quadrupling the pre-crisis rate. The Kidnap and Ransom (K&R) insurance market, Loss of Hire cover, and P&I (Protection and Indemnity) Club additional calls all experienced upward pressure, and several P&I Clubs issued Circular Letters advising members of enhanced underwriting scrutiny for Gulf-bound vessels.

The Baltic Dirty Tanker Index (BDTI), particularly the TD3C route (Middle East Gulf to China on VLCCs), underwent extraordinary volatility. Route-specific World Scale rates — the industry benchmark for tanker freight — saw spikes of 200–400% from pre-crisis levels before partially retracing as demand destruction set in. The knock-on effect on Total Cost of Ownership (TCO) for a single VLCC voyage through the region escalated to levels that, for many operators, exceeded the charter revenue generated, resulting in a rational decision to withdraw tonnage from the region.

C. Fleet Deployment and Operational Decision-Making

At the fleet management level, tanker operators faced an acute variant of the classical Vehicle Routing Problem (VRP) under uncertainty — a core topic in operations management literature. The objective function shifted from minimum cost routing to minimum risk routing, with risk defined as a composite of: probability of vessel interdiction or attack, insurance cost, regulatory compliance exposure (sanctions risk), and crew safety considerations.

The operational response by major tanker operators fell into several observable categories: (a) full withdrawal from Gulf waters, anchoring vessels in the Gulf of Oman or Arabian Sea to await developments; (b) flag-state-contingent operations, whereby vessels registered under flags that had received Iranian exemptions — including Indian-flagged carriers — were able to continue limited transits; (c) cargo substitution, wherein Gulf-sourced crude was replaced with spot purchases from alternative origins including West Africa, the North Sea, and the Americas; and (d) speed optimisation, whereby some operators reduced vessel speeds to extend voyage duration and preserve optionality pending market intelligence updates. India's Operation Sankalp — a naval escort programme previously deployed during the 2019 Gulf tensions — was reactivated between 14–24 March 2026, successfully evacuating five LPG carriers under Indian Navy protection.

D. Port Operations and Terminal Management

The cascading disruption to tanker schedules generated significant secondary operational challenges at destination ports and terminals. Crude oil terminals in India (particularly Vadinar, Mundra, and Paradip), China (Ningbo, Zhoushan), Japan (Chiba, Yokkaichi), and South Korea (Ulsan, Yeosu) faced acute uncertainty in berth scheduling and arrival planning. Just-in-time cargo nomination systems that underpin modern crude import operations were rendered inoperable as vessel ETAs became unreliable. Indian port authorities responded by easing port procedures and expediting customs clearances for alternative-source crude cargoes arriving via non-Hormuz routing — reducing port cycle time (PCT) and vessel turn-around time (TAT) to partially compensate for the additional voyage days introduced by rerouting.

V. SUPPLY CHAIN MANAGEMENT ANALYSIS: GLOBAL OIL MARKET DISRUPTION

A. Supply-Side Disruption Magnitude

The global oil supply chain absorbed what the IEA characterised as the largest supply disruption in history. Strait of Hormuz throughput fell from approximately 20 mbpd pre-crisis to approximately 3.8 mbpd by early April 2026 — a reduction of over 80%. Gulf producers, with storage rapidly filling and export infrastructure constrained, cut total oil production by at least 10 mbpd. Global oil supply was projected by the IEA to plunge by 8 mbpd in March 2026 alone. This scenario represents an extreme case of supply-side black swan disruption — a category analysed extensively in the resilience literature following the 2011 Tōhoku earthquake and Fukushima nuclear crisis, which severely disrupted global automotive supply chains. Both involved geographic concentration of supply, single-point-of-failure infrastructure, and rapid propagation across sectors far removed from the origin of disruption.

B. Demand-Side Response and Demand Destruction

At crude oil prices near USD 150/bbl and refined fuel prices for diesel and jet fuel exceeding USD 200/bbl at certain benchmarks, demand destruction became observable across multiple economies. South Korea announced a five-month restriction on naphtha exports. The Philippines implemented a temporary four-day working week. Pakistan curtailed domestic consumption to preserve supply for essential services. Several Asian nations began restricting fuel exports to protect domestic markets. FGE NexantECA estimated Asian demand had fallen by nearly 2 million barrels per day by mid-April 2026. The bullwhip effect — wherein demand signal distortions amplify as they move upstream in a supply chain — was clearly observable, with downstream refinery capacity underutilisation coexisting with upstream crude oil stranded in the Persian Gulf.

C. Inventory Management and Emergency Stock Drawdown

The IEA coordinated an emergency stock release from member nations' Strategic Petroleum Reserves (SPR), providing a critical buffer against the supply shortfall. India's government announced on 11 March 2026 that petrol, diesel, and aviation turbine fuel inventories remained sufficient to manage short-term disruptions, enabled by pre-existing strategic reserves held at facilities including Visakhapatnam, Mangaluru, and Padur underground cavern sites, with a combined storage capacity of approximately 5.33 million metric tonnes. This provided approximately 9.5 days of import cover independently, which when combined with pipeline stocks and refinery storage provided a total buffer of approximately 65–70 days of supply at normal consumption rates.

D. SCOR Framework Application to the Crisis

The Supply Chain Operations Reference (SCOR) framework provides a structured lens through which the operational impacts can be categorised across its five primary processes — Plan, Source, Make, Deliver, and Return — alongside the enabling dimension. Table II presents this comparative analysis.

Table II: SCOR Framework Analysis — Pre-Crisis vs. Crisis-Impacted Oil Supply Chain State

SCOR Process	Pre-Crisis State	Crisis-Impacted State (Feb–Apr 2026)
Plan	Demand forecasting aligned to spot market and long-term offtake agreements; optimised fleet scheduling.	Demand planning disrupted by price volatility; fleet schedules invalidated; forced shift to scenario-based contingency planning.
Source	Supplier diversification across 40+ nations; primary reliance on Gulf producers for ~50% of India's imports.	Forced rapid re-sourcing from West Africa, Americas, North Sea; re-engagement with Iran after 7-year hiatus; Russian supply constrained by sanctions waiver expiry.
Make	Refineries operating at optimal crude slate with planned grade mix.	Refinery crude slate disrupted; refiners reconfiguring crude blends to accommodate alternate-origin grades.
Deliver	Hormuz-routed VLCC voyages; predictable ETAs; standard freight and insurance costs.	Rerouting via Cape of Good Hope; +15–20 day voyage times; freight rate spikes of 200–400%; war-risk insurance quadrupled.
Return	Standard off-spec returns and product quality claims processes.	Off-spec issues emerging from grade mixing; delayed returns logistics due to port congestion.
Enable	Established commercial contracts; predictable regulatory framework; standard compliance environment.	Force majeure declarations; contract renegotiations; sanctions compliance complexity; governmental intervention through naval escort and regulatory orders.

VI. INDIA'S STRATEGIC RESPONSE: AN OPERATIONS MANAGEMENT PERSPECTIVE

A. India's Structural Supply Chain Vulnerability

India's import dependency profile creates a specific pattern of exposure. Approximately 30–35% of India's crude oil imports transit the Strait of Hormuz, alongside the vast majority of its LPG imports — the primary cooking fuel for hundreds of millions of Indian households. The Middle East collectively (Iraq, Saudi Arabia, UAE, Iran, Kuwait) typically accounts for 45–55% of India's total crude imports. Despite diversification to 40+ source countries, supplier concentration remains significant, with the top five suppliers typically accounting for 75–80% of total import volume. India consumes approximately 5.5 mbpd and imports more than 85% of its total requirements. India's finance ministry issued a warning in April 2026 that its growth forecast of 7.0–7.4% for the financial year ending March 2027 faces considerable downside risk due to rising energy costs and supply chain disruptions.

B. India's Adaptive Operational Measures: The 3R Framework

Risk Mitigation (pre-crisis and immediate response): India had substantially diversified its crude import base in the years preceding the crisis, sourcing from over 40 countries by March 2026. This diversification — a form of supply chain risk pooling — meant that no single supply disruption could immediately compromise total supply. The government's 24×7 petroleum inventory monitoring control room represented an operational intelligence capability critical to risk visibility.

Resilience (operational adaptation during the crisis): India demonstrated supply chain resilience through three primary channels. First, it successfully negotiated bilateral access through Iran for Indian-flagged vessels — Iran granted India, alongside China, Russia, Iraq, and Pakistan, preferential passage rights on 26 March 2026. Second, India reactivated Operation Sankalp — the naval escort mechanism — to physically protect and evacuate Indian-flagged LPG carriers. Third, India resumed Iranian crude imports for the first time in seven years, demonstrating the pragmatic ‘strategic autonomy’ ethos that characterises India’s energy procurement approach.

Recovery (structural repositioning): Within two weeks of the crisis onset, India’s non-Hormuz routing had increased from approximately 55% to 70% of total imports — a remarkable operational reconfiguration. India enhanced procurement from West African producers (Nigeria, Angola), Latin American sources (Brazil, Venezuela), and explored Central Asian routing mechanisms. Alternative route utilisation was operationally expanded to include the Suez Canal for West African cargo and direct Arabian Sea routing for Atlantic Basin purchases.

C. Sector-Specific Operational Responses

Petroleum Products: The Natural Gas Control Order issued on 9 March 2026 under the Essential Commodities Act prioritised domestic PNG supply, CNG for vehicles, and critical industrial users including fertilisers, refineries, and petrochemicals, while implementing controlled reductions for less critical industrial consumers — representing textbook priority-based demand management under supply constraint.

LPG: LPG supply management required particular operational agility given its structural dependence on Gulf imports. The successful transit of an Indian LPG carrier, Shivalik, from Mundra Port via the Strait of Hormuz on 16 March 2026 demonstrated the operational value of India’s diplomatic framework with Tehran. IOCL implemented stock rotation protocols and increased sourcing from the United States and other alternative geographies.

Refinery Operations: Indian state refiners including IOC, BPCL, and HPCL reconfigured their crude slates to accommodate alternate-origin grades. Gulf crudes — particularly the high-sulphur, high-density grades from Iraq and Saudi Arabia — were partially substituted with sweeter, lighter grades from West Africa and the Americas, requiring operational adjustments to distillation column parameters and desulphurisation unit loading.

VII. KEY QUANTITATIVE PARAMETERS: A COMPARATIVE OVERVIEW

Table III: Key Quantitative Parameters — Pre-Crisis vs. Crisis Period Comparison

Parameter	Pre-Crisis (Feb 2026)	Crisis Peak (Mar–Apr 2026)
Strait of Hormuz daily oil throughput	~20 million bpd	~3.8 million bpd
Brent crude oil price	~USD 70/bbl	~USD 130–150/bbl
War-risk insurance premium per transit	0.125% of hull value	0.2–0.4% of hull value
VLCC insurance cost per voyage (USD 100M hull)	~USD 125,000	~USD 200,000–400,000
Additional voyage days (Cape rerouting)	Not applicable	+15 to 20 days
India non-Hormuz routing share	~55% of imports	~70% of imports
Global oil supply disruption (IEA est.)	Baseline	~8 mbpd decline (Mar 2026)
India strategic reserve buffer	~9.5 days (standalone SPR)	~65–70 days (total incl. pipeline/refinery stocks)

VIII. RECOMMENDATIONS: OPERATIONAL AND SUPPLY CHAIN MANAGEMENT IMPERATIVES

A. For Global Oil Tanker and Carrier Operators

Geopolitical Risk Tiering in Fleet Deployment: Tanker operators should institutionalise a formal geopolitical risk tiering system for global maritime zones, comparable to the credit tiering used in financial markets. Zone-specific risk scores — updated dynamically using real-time geopolitical intelligence feeds — should inform voyage acceptance decisions, freight rate structuring, and charter party clauses. Standard clauses such as CONWARTIME 2004 and VOYWAR 2004 should be supplemented with bespoke provisions addressing the specific operational contingencies revealed by the 2026 crisis.

Pre-Negotiated Multi-Route Contingency Plans: Voyage planning systems should incorporate pre-modelled alternative routing options with associated cost-benefit calculations, enabling commercial teams to execute routing changes within operational timeframes. The default position in high-risk transit zones should be to have Cape of Good Hope and Suez alternatives pre-calculated at voyage fixture stage.

Dynamic Insurance Coverage Structures: The industry should develop parametric war-risk insurance products — instruments that pay out automatically upon predefined triggers such as transit zone classification changes or formal conflict declarations — reducing the lag between risk materialisation and coverage activation that characterised the 2026 crisis response.

B. For Global Oil Supply Chain Managers and Refiners

Multi-Sourcing as Standard Architecture: Refiners should institutionalise maximum supplier concentration limits — avoiding sourcing above 20–25% from any single geographic region — and actively maintain operational relationships with suppliers across all accessible global basins, including Atlantic, Pacific, and Arctic margin producers, even when unit economics temporarily favour concentration in lower-cost Gulf sources.

Bilateral Cargo Swap Agreements: Refiners and national oil companies should establish standing bilateral crude oil swap agreements with counterparts in non-conflict-exposed regions. These agreements — operationally similar to central bank currency swap lines — can be activated during disruption events to bridge supply continuity without requiring emergency spot market procurement at distressed prices.

Refinery Crude Slate Flexibility Investment: Capital investment decisions for refinery upgrades should incorporate flexibility metrics — the ability of a refinery to process a wider range of crude grades without significant operational compromise — as a strategic criterion alongside traditional return metrics. Fluid Catalytic Cracking (FCC) unit and hydrocracker versatility are particularly valuable in crisis scenarios where preferred grade availability is constrained.

C. For India: Structural Supply Chain Resilience Measures

Strategic Petroleum Reserve Expansion: India's current SPR capacity of approximately 5.33 million metric tonnes, providing roughly 9.5 days of standalone import cover, is operationally insufficient against a protracted Hormuz-type disruption. India should target expansion to a minimum of 90 days of import cover consistent with IEA member benchmarks, with Phase III cavern development at sites including Chandikhol (Odisha) and Padur II prioritised in capital planning.

Operationalising Operation Sankalp as Standing Capability: The naval escort mechanism demonstrated in March 2026 should be institutionalised as a standing operational protocol with pre-defined activation triggers, dedicated vessel assignments, and pre-negotiated coordination frameworks with the Ministry of Petroleum and port authorities — transforming an ad hoc crisis response into a structured supply chain continuity capability.

Pipeline Diversification — The INSTC and Chabahar Route: The International North–South Transport Corridor (INSTC), linking India through Iran to Central Asia and Russia via rail, road, and maritime connections, offers a structurally diversified overland energy import pathway that bypasses the Strait of Hormuz entirely. India's continued development of Chabahar Port and associated rail connectivity represents both a commercial infrastructure investment and a strategic supply chain resilience measure whose operational development timeline should be accelerated in light of the 2026 crisis.

LPG Import Diversification: India should diversify LPG supply sources to include U.S. Gulf Coast, West African, and Australian origins, and should expand domestic LPG production from petrochemical complexes. Floating Storage and Regasification Units (FSRUs) deployed offshore Indian ports can provide flexible LPG and LNG import capacity without Strait-dependent routing.

IX. THEORETICAL FRAMEWORK INTEGRATION

This study draws upon three established frameworks. The **Total Cost of Ownership (TCO) Model** — originally articulated by Ellram (1993) — is applied here in the extended sense of 'Total Cost of Supply Chain Disruption' (TCSD). A TCSD framework adds a disruption premium to unit economics — the expected value of supply chain failure costs including emergency sourcing premiums, inventory carrying costs during disruptions, and demand satisfaction losses. Under TCSD analysis, geographically diverse sourcing strategies that appear more costly in normal operating conditions may be demonstrably superior when disruption probabilities and consequence magnitudes are incorporated.

The **SCOR framework's** application, illustrated in Table II, exposes a specific capability gap in the 'Enable' domain — specifically in risk management process maturity and supply chain continuity planning standards — across both private shipping operators and national oil companies alike. The **3R (Robustness–Resilience–Recovery) Model** maps precisely to the operational responses observed in India's case. Robustness is represented by India's pre-existing diversification across 40+ supplier countries and its strategic reserve infrastructure. Resilience is demonstrated through rapid re-sourcing, route diversification, and diplomatic engagement. Recovery is operationalised through the structural pivots — INSTC development, SPR expansion planning, and domestic production enhancement — that the crisis catalysed.

X. CONCLUSION

The 2025–2026 Israel–Iran conflict and the resulting Strait of Hormuz disruption represent a watershed event in global oil supply chain history — one that has exposed the structural fragility of a global energy system over-concentrated in a single geographic chokepoint. From an operations management perspective, the crisis has simultaneously been a stress test and an accelerator: it has revealed critical vulnerabilities in tanker operations, freight markets, insurance systems, and refinery crude supply chains, while also catalysing adaptive innovations in routing, sourcing, and diplomatic supply chain management.

India's response exemplifies the multi-layered nature of supply chain resilience in practice. By leveraging diplomatic bilateral channels for vessel passage, reactivating naval escort capabilities, diversifying import sources with remarkable operational speed, resuming Iranian crude imports opportunistically, and deploying strategic reserves as buffers, India demonstrated a supply chain management approach that blended commercial pragmatism with sovereign capability — a model that is analytically instructive for other import-dependent developing economies.

The fundamental lesson of the 2026 Strait of Hormuz crisis is one that the resilience literature has long advanced but rarely seen tested at this scale: supply chain concentration creates existential risk, and the cost of resilience — though real and quantifiable — is invariably lower than the cost of catastrophic disruption. The time to invest in resilience is before the crisis, not during it.

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