ResiLog

Transportation & Logistics Adaptation to Geopolitical Disruptions in the Suez Canal Region: Supply Chain Resilience Roadmap

Maynooth University
National University of Ireland Maynooth

Industrial Report 2026

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Foreword

FROM THE RESILOG PROJECT TEAM

The Suez Canal corridor is one of the world's most strategically important maritime trade arteries, facilitating approximately 12–15% of global trade and nearly 30% of global container traffic annually. Yet between late 2023 and 2024, this critical corridor evolved into something far more complex than a logistics gateway—it became a frontline of geopolitical disruption with immediate consequences for global and regional supply chains.

The Red Sea disruption did not emerge in isolation. It arrived following a decade of consecutive global shocks, including the global financial crisis, COVID-19, the Russia–Ukraine war, and growing geopolitical tensions across key trade corridors. For logistics and supply chain actors operating in the Suez Canal region, the disruption reinforced a fundamental reality: traditional recovery approaches are no longer sufficient in an environment characterised by persistent uncertainty, rapidly shifting risks, and prolonged operational instability.

As a part of its commitment to advancing impactful, evidence-based research that addresses emerging global business challenges, the School of Business at Maynooth University, Ireland has sponsored the ResiLog project. The project was initiated to understand how regional logistics networks responded, adapted, and survived under these conditions. Through more than 30 days of direct field engagement and extensive interviews with shipping lines, container terminals, freight forwarders, manufacturers, SMEs, and government authorities, the project captured practical insights into the operational challenges, strategic responses, and resilience practices emerging across the Suez Canal logistics ecosystem.

Based on the participants' insights, the report develops a Supply Chain Resilience Roadmap. It is designed to support industry leaders, logistics operators, and policy-makers in strengthening supply chain resilience under persistent disruption. The roadmap identifies the critical organisational capabilities, coordination mechanisms, and strategic investments required across the entire disruption phases.

Dr. Amr Mahfouz
Principal Investigator
Maynooth University

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Alradwan

Executive Summary

The closure of the Bab El-Mandab Strait amid the escalation of the Gaza War caused a significant disruption to the Suez Canal trade corridor. This was not the corridor's first disruption: in 2021, the Ever Given container vessel blocked the waterway and left global trade in chaos, with adverse implications for prices and product availability. But where the majority of reports and articles have emphasised the global effect of Suez Canal disruption on supply chains and logistics, very few have considered the domestic effects on the local firms and logistics networks operating in the region itself.

This is the first report of its kind to investigate the impact of the Red Sea Blockage (RSB) on the domestic logistics network operating in the Suez Canal region and the counter-measures applied to respond and adapt. The report offers a Supply Chain Resilience Roadmap that guides businesses from crisis to competitive advantage, structured across three phases — Anticipation & Alignment, Stabilise & Adapt, and Reconfiguration & Strengthen — and underpinned by six capability areas observed in practice.

Six Capabilities at The Heart of Corridor Resilience

Anticipation & Situation Awareness

For a logistics network in the Suez Canal region, anticipation and situation awareness must transition from reactive crisis management to a normalised, proactive organisational routine. Awareness in this high-stakes corridor is a collectively mobilised meta-capability: the close physical and professional proximity of regional actors allows for the real-time exchange of

intelligence and harmonised decision-making. By fostering shared situational understanding, the network can shift from bouncing back to long-term business survivability.

Alternative Business Approaches, Markets & Designs

In response to the disruption, firms rapidly shifted from efficiency-driven models to survival-oriented strategies, fundamentally reconfiguring how they operate and design their supply chains. Organisations diversified their markets — leveraging domestic demand to offset export disruption — and rebalanced their customer and carrier portfolios to reduce dependency on dominant players. Companies redesigned supply chains and introduced innovative service offerings and incentives to retain customers and stabilise flows.

Effective Inter/Intra-Organisational Integration

During the disruption, firms recognised that operational continuity depended less on individual performance and more on tightly coordinated action across internal functions and external partners. At the network level, organisations strengthened collaboration with partners — and even competitors — through trust-based coordination focused on collective survival. In parallel, closer customer integration enabled firms to co-develop adaptive solutions and sustain demand.

Investing in Capacity Extension & Multi-Sourcing

Firms responded to the RSB with targeted structural investments to stabilise operations and reduce dependency on fragile supply channels. This included expanding physical capacity, developing new facilities, and strengthening multi-sourcing strategies to ensure continuity of critical inputs. Organisations also increased control over logistics flows by internalising key activities and building redundancy into transport and sourcing networks.

Institutionalising Resilience toward Agile Decision-Making

Firms embedded resilience into their operating models by shifting from reactive crisis management to proactive risk monitoring supported by agile decision-making routines. This included the adoption of regular cross-functional coordination practices and faster, decentralised decision structures. At the organisational level, companies formalised resilience either through dedicated crisis units or by distributing risk management responsibilities across functions, ensuring both speed and flexibility.

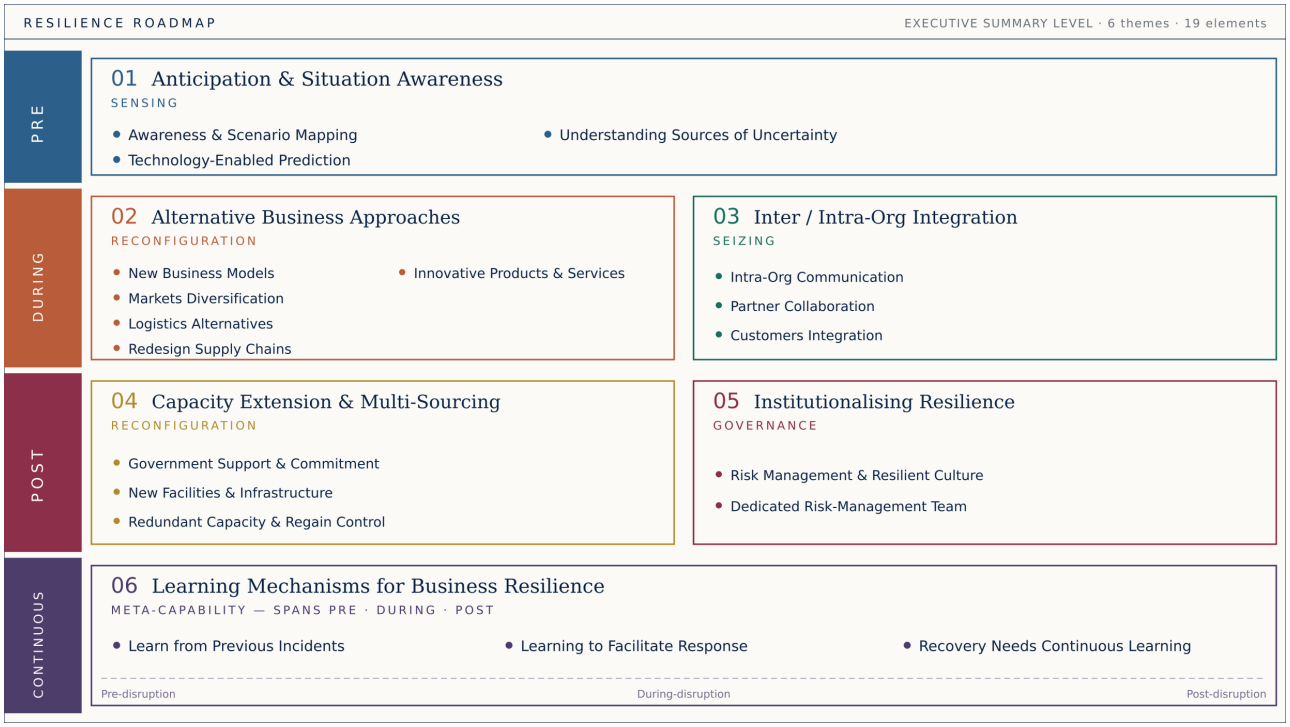
Learning Mechanisms for Business Resilience

Firms strengthened resilience by embedding continuous learning into daily operations, drawing on past disruptions and real-time experience to guide decision-making under uncertainty. Both formal training and on-the-job learning enabled employees to adapt quickly,

share knowledge across functions, and support coordinated responses. Beyond internal development, organisations extended learning to partners and customers to maintain operational flow and compliance — positioning learning not as a one-off activity, but as an ongoing capability that underpins adaptability and long-term resilience.

Taken together, these six capabilities form a coherent resilience system. They are not sequential steps but interlocking practices that must be activated before, during, and after a disruption. The chapters that follow examine each in detail.

RESILIENCE ROADMAP — EXECUTIVE SUMMARY LEVEL



Introduction

The Red Sea and Suez Canal corridor represents one of the most strategically important trade arteries in the global economy. In addition, the corridor plays a critical role in global energy security, with substantial volumes of oil and liquefied natural gas (LNG) shipments transiting through the region toward European and international markets.

The escalation of the Gaza War in late 2023 and early 2024, however, transformed the region from a critical logistics gateway into a high-risk geopolitical hotspot. Repeated Houthi attacks on commercial vessels forced major shipping lines to suspend Suez Canal transits and reroute vessels around the Cape of Good Hope. Sailing distances increased by nearly 30%, voyage times by 17%, and freight rates by more than 250%. Vessel schedules became unreliable, and supply chains across multiple industries experienced severe operational disruption.

While the global implications of the Red Sea crisis received significant international attention, the most immediate and severe consequences were experienced by the regional logistics ecosystem operating around the Suez Canal itself. The disruption led to a sharp decline in vessel traffic through the canal, with trade volumes falling by more than 40% during peak disruption periods. Regional ports, freight forwarders, manufacturers, logistics service providers, and export-oriented firms faced mounting pressure from shipment delays, reduced cargo flows, volatile transportation costs, capacity shortages, and growing uncertainty surrounding trade continuity.

Importantly, the RSB cannot be viewed as a temporary or isolated crisis. Ongoing geopolitical instability across the Middle East and the Horn of Africa continues to create uncertainty around the long-term stability of global maritime corridors. Tensions surrounding the Gaza conflict, instability around the Bab El-Mandab Strait, and recurring tensions between Iran and the United States collectively reinforce the fragility of the wider regional trade environment. Around 20% of global oil and LNG flows move through the Strait of Hormuz alone. Although these tensions may not directly target the Suez Canal, the canal's operational viability remains heavily dependent on the security and stability of its surrounding maritime access routes.

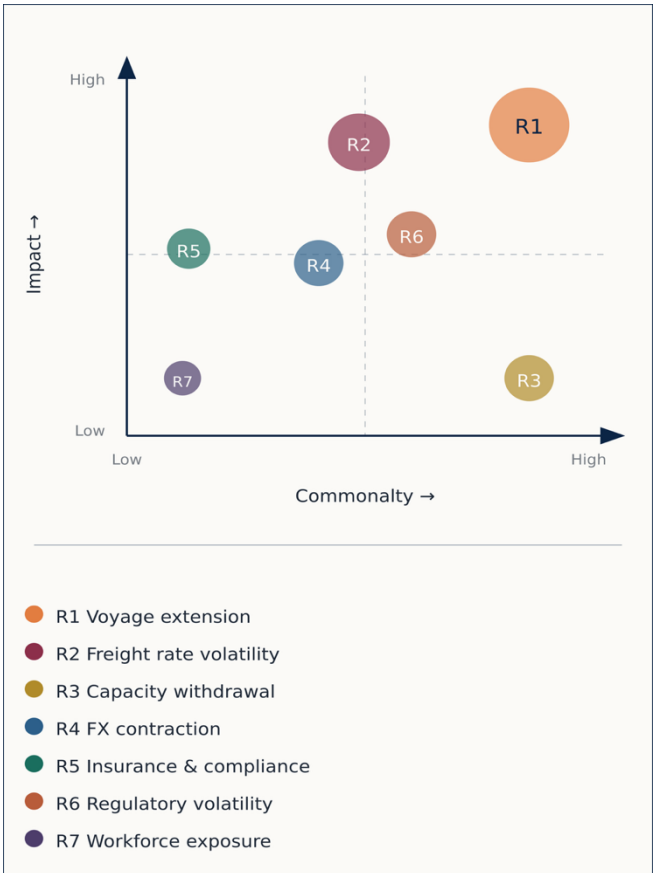
Against this backdrop, the ResiLog project was initiated to examine how logistics and supply chain actors operating in the Suez Canal region are responding to this new era of persistent geopolitical disruption. Through more than 30 days of direct field engagement — interviews, workshops, and structured discussions with shipping lines, freight forwarders, manufacturing firms, container terminals, and government authorities — the project captured practical insights into the operational challenges, response strategies, and resilience practices

emerging across the regional logistics network. The project also identified major gaps in current risk management and resilience capabilities that require further attention to strengthen long-term preparedness and adaptability.

Based on these findings, the project developed a Supply Chain Resilience Roadmap built around six strategic capability areas designed to support logistics and supply chain actors before, during, and after major disruptions. The roadmap provides practical guidance for improving crisis preparedness, accelerating response coordination, strengthening organisational learning, and enhancing long-term business survivability under prolonged uncertainty. Many of the strategies identified build upon resilience practices that first emerged during the COVID-19 pandemic, but have since evolved into more advanced and structurally embedded approaches tailored to the realities of persistent geopolitical risk in the Suez Canal region.

Key Disruptions Emerged from RSB

The Red Sea Blockage triggered a cluster of overlapping disruptions that propagated through the corridor in distinct ways. The landscape clusters seven disruptions into three broad zones: a dominant zone in the upper-right (R1, R2) representing the disruptions that demand priority strategic attention; a diffuse middle zone (R3, R4, R6) representing disruptions that are broadly experienced but more manageable on a case-by-case basis; and a focused-exposure zone in the lower-left (R5, R7) representing disruptions that are real for specific firms but less material at the corridor scale.



R1 — Voyage Extension & Schedule Unreliability

IMPACT: HIGH · COMMONALITY: HIGH

The single most universally cited disruption. Extended transit times added 10–20 days on routes that had to detour around the Cape of Good Hope, breaking just-in-time models and triggering cascading delays across manufacturing and perishable cargoes. Every participant in the maritime and logistics services sectors reported direct exposure; manufacturers reported significant knock-on inventory effects.

R2 — Freight Rate Volatility

IMPACT: HIGH · COMMONALITY: MODERATE

Spot and contract freight rates rose sharply during the blockage — by more than 250% at peak on selected lanes — and remained elevated thereafter. The disruption was severe for firms operating on thin margins but did not affect all participants equally; firms with locked-in long-term contract rates were partly insulated.

R3 — Capacity Withdrawal

IMPACT: LOW · COMMONALITY: HIGH

Many participants noted reduced vessel calls or carrier withdrawal at affected ports, but the effective operational impact was modest for most because alternative carriers — particularly

NVOCC (Non-Vessel Operating Common Carriers) and mid-tier operators — absorbed the displaced demand. Affected terminals actively recruited new commercial relationships to replace the withdrawn anchor customers.

R4 — Foreign-Currency Contraction

IMPACT: MODERATE · COMMONALITY: MODERATE

Currency depreciation, compounded by a sharp fall in Suez Canal foreign-currency inflows, increased the local-currency cost of imported inputs and freight. Firms with US-denominated obligations were more sharply affected than purely domestic operators; importers faced a double exposure of higher freight and weaker purchasing power.

R5 — Insurance & Compliance Pressure

IMPACT: MODERATE · COMMONALITY: LOW

Underwriters reclassified the corridor as a war-risk zone and introduced new premia plus additional compliance documentation for transits in the affected area. Route decisions became driven less by cost than by insurance and market-access (US/EU) considerations. The impact was material where it landed, but only a minority of participants reported direct exposure.

R6 — Government & Regulatory Volatility

IMPACT: MODERATE · COMMONALITY: MODERATE

Shifting government directives, new regulatory requirements (notably the ACID advance cargo declaration system), and short-notice policy interventions added administrative friction on top of the trade disruption itself. Reported across multiple sectors without a single dominant cluster.

R7 — Workforce & Skill Exposure

IMPACT: LOW · COMMONALITY: LOW

A small number of participants noted strain on specialised staff — claims handlers, planners, and customs experts trained on the new ACID regime. The crisis exposed a regional shortage of integrated logistics and supply-chain talent. Real but localised in its immediate impact, although structurally important for long-term capability building.

THEME

01

PRE-DISRUPTION

Anticipation & Situation Awareness

Anticipation moves from reactive crisis management to a normalised, proactive routine — collectively mobilised across the regional network.

THEME 01 • PRE-DISRUPTION PHASE • CAPABILITY: SENSING

Anticipation & Situation Awareness

The succession of global crises over the past decade has produced a fundamental shift in managerial thinking, moving firms away from predominantly reactive approaches toward more anticipatory and forward-looking modes of risk management. In this context, proactive risk management and anticipation have become embedded in the day-to-day practices of organisations operating within the Suez Canal logistics network.

Situation awareness emerged as the foundational capability underpinning proactive resilience across the network. It takes three interconnected forms in practice: continuous environmental scanning and scenario mapping, technology-enabled prediction, and a deliberate, structured effort to understand the sources of uncertainty.

> *“Risk management has become a daily behaviour, not just papers and policies. Before each vessel, we hold a meeting: how will it operate? What are the scenarios? What are the risks? After each vessel, we review performance.”*

Awareness & Scenario Mapping

Continuous awareness of the surrounding environment is critical for enabling anticipatory responses to disruption. In the Suez Canal network, anticipation predominantly takes place through decentralised, manager-led efforts at the departmental level. Decision-makers continuously monitor economic, political, and operational conditions relevant to their businesses.

Situation awareness is reinforced through the use of pre-defined disruption scenarios, particularly among large shipping lines with extensive global exposure. Major shipping lines — especially the so-called 'big five' — have institutionalised scenario-based planning as a core component of

"The management actively engages in 'risk anticipation' by monitoring regional developments, shipping line activities, competing terminals, and analysing economic shifts (like dollar fluctuations)."

— Yards Manager, Container Terminal

crisis preparedness. They maintain detailed playbooks addressing a range of high-impact events, including regional conflicts and the closure of critical maritime corridors. The findings further suggest that the RSB accelerated the development of similar scenario-mapping practices among regional firms that had previously relied on informal, experience-based anticipation.

PRACTICES OBSERVED

- Monitoring regional developments continuously, not episodically
- Analysing economic shifts (currency, freight rates, port volumes) as leading indicators
- Using prepared scenarios from prior disruptions rather than designing each response from scratch
- Developing a playbook that contains the full set of plausible scenarios for the corridor

> *"In the Russia–Ukraine crisis, many companies simply pulled those scenarios off the shelf and implemented them quickly. The same logic was applied almost copy-paste in the Red Sea."*
>
> ***— Planning Manager, Shipping Line***

Technology-Enabled Prediction

Digital technologies played a critical role in supporting disruption anticipation. Firms relied on weather-forecast platforms and global ship-tracking applications such as Marine Traffic to detect changes in weather windows and shipping movements — information that fed directly into rerouting decisions and the redistribution of cargoes across alternative ports.

> *"Weather forecast technologies and marine traffic applications help us to develop proactive plans to mitigate anticipated risks on all shipping operations."*
>
> ***– Regional Manager, Shipping Line***

Despite the growing sophistication of digital tools, the findings reveal clear limits to technology-led anticipation when it is deployed in isolation. The RSB exposed the continued reliance on managerial experience and judgement, particularly in complex scenario mapping and strategic decision-making contexts. Technology supports, but does not substitute, leadership insight, cross-functional coordination, and contextual interpretation.

> *""When it comes to 'forecasting': it requires both leadership mindset and cross-department communication. Technology can support, but it doesn't replace the need for experienced decision-making."*
>
> ***– Export & Logistics Manager, Manufacturing Sector***

PRACTICES OBSERVED

- Pair predictive platforms with experienced managerial judgement
- Use weather and shipping-traffic data to inform port and routing decisions
- Treat 'transparent' freight platforms with caution — verify against direct relationships
- Build internal tooling that connects forecast data to operational decision rights

Understanding Sources of Uncertainty

While a proactive risk-management mindset was widely evident, the anticipation of government and institutional decisions emerged as particularly challenging. Interviewees consistently highlighted that recent geopolitical crises — including the RSB — have intensified the volatility of domestic and international policy environments. At the domestic level, sudden government interventions were described as a greater source of risk than trade disruption itself, because they cannot be predicted or hedged against.

> *"RSB crisis forced me to rethink everything: The greatest risk is not global trade disruptions. The greatest risk is the sudden change in government decision. Unlike global issues, a sudden government decision cannot be predicted or avoided."*
>
> ***— Planning Manager, Shipping Line***

At the international level, shipping lines' decisions were similarly exposed to rapid shifts in political and regulatory frameworks. Political and legal considerations have increasingly become decisive factors in determining route viability, often overriding pure cost or efficiency calculations. Anticipation is further complicated by the influential role of insurance companies and underwriters, whose risk assessments can rapidly reshape operational decisions across the entire network.

> *"The diversion of traffic happened almost the same day, based on the instructions of the underwriters and insurance companies that cover these lines. Clear orders were issued not to transit this corridor."*
>
> ***— Planning Manager, Shipping Line***

PRACTICES OBSERVED

- Carefully build government-decision sensitivity into scenario planning
- Track other actors' priorities and decision-making cycles, not just your own
- Review supplier and service-provider contract terms periodically to expose hidden uncertainty
- Engage insurers and underwriters as part of the sensing apparatus, not only as a downstream cost

Key Takeaways

- Anticipation must be institutionalised — embedded into daily routines (pre-vessel meetings, post-vessel debriefs) rather than triggered by crisis.
- Awareness is collectively mobilised across the regional network through close professional ties; formal systems alone are insufficient.
- Insurance and government decisions are now first-order determinants of operational viability — they need a permanent place in the risk register.
- Scenario playbooks developed for one crisis (e.g., Russia–Ukraine) can be reapplied quickly to the next, provided they are maintained continuously.

ROADMAP — THEME 01 SECTION

RESILIENCE ROADMAP

THEME 01 · ANTICIPATION & SITUATION AWARENESS

PRE

01 Anticipation & Situation Awareness

SENSING · PRE-DISRUPTION PHASE

Awareness & Scenario Mapping

- Monitor regional developments
- Analyse economic shifts as indicators
- Reuse prior-disruption scenarios
- Develop a corridor playbook

Technology-Enabled Prediction

- Pair platforms with judgement
- Use weather & traffic data
- Verify freight-platform quotes
- Build internal forecasting tooling

Understanding Sources of Uncertainty

- Govt-decision sensitivity in planning
- Track other actors' priorities
- Review contract terms periodically
- Engage insurers as sensing apparatus

3 elements · 12 practices

DURING

02 Alternative Business Approaches

RECONFIGURATION · 5 elements

03 Inter / Intra-Org Integration

SEIZING · 3 elements

POST

04 Capacity Extension & Multi-Sourcing

RECONFIGURATION · 3 elements

05 Institutionalising Resilience

GOVERNANCE · 2 elements

CONTINUOUS

06 Learning Mechanisms for Business Resilience

META-CAPABILITY · 3 elements

Pre-disruption During-disruption Post-disruption

THEME

02

DURING · ADAPTATION

Alternative Business Approaches, Markets & Designs

Firms shift from efficiency-driven to survival-oriented strategies, reconfiguring business approaches, markets, and supply-chain designs.

THEME 02 • DURING DISRUPTION • CAPABILITY: RECONFIGURATION

Alternative Business Approaches, Markets & Designs

Once the RSB occurred, organisational priorities converged around maintaining product flows, preserving functional performance, and minimising financial losses. Firms moved decisively away from efficiency-driven operating models and toward survival-oriented strategies that reconfigured how they did business at almost every level — production logic, market portfolio, logistics arrangements, supplier base, and customer offering.

Five sub-themes describe how this system reconfiguration was enacted: new business models, market diversification, logistics alternatives, supply-chain redesign, and product/service innovation.

> *"The solution that saved us was shifting from shipping cars in containers to shipping them via RORO (Roll-On/Roll-Off) vessels."*

New Business Models

The early phase of the RSB severely disrupted material flows to manufacturing firms as shipping lines rerouted vessels and suspended Suez Canal transits. Reliance on just-in-time practices became untenable. Firms were compelled to prioritise operational continuity over efficiency, leading to deliberate shifts toward inventory buffering and demand-driven production models — a primary theme being the intentional abandonment of lean planning in favour of just-in-case redundancy.

Beyond production, firms reconfigured logistics and shipping modes. Major shipping lines consolidated vessel capacities to reduce corridor exposure, leaving freight space constrained and rates volatile. Firms responded by adopting alternative shipping solutions — notably the shift from containerised vehicle transport to Roll-On/Roll-Off (RORO) shipping — and by

redefining their position in the logistics chain, with several manufacturers stepping into roles previously held by intermediaries or freight forwarders.

> *"The best route in a crisis time like this is: make-to-order. Only if you have it, you promise and deliver. We must have enough inventory to afford material stuck at sea."*
>
> ***— CEO, Manufacturing, SME***

PRACTICES OBSERVED

- Replace just-in-time with redundancy-based planning where lead times are exposed
- Build flexible shipping strategies that include non-traditional modes (RORO, NVOCC feeders)
- Take over business rules previously owned by affected partners where it preserves continuity
- Introduce new business philosophies internally to overcome change resistance

Market Diversification

Market diversification emerged as a central response to the RSB, particularly through strategic rebalancing between export and domestic markets. Firms that relied exclusively on exports were disproportionately exposed when maritime routes were disrupted. In contrast, organisations with access to local markets leveraged domestic demand as a stabilising mechanism, absorbing operating costs while export channels were constrained.

> *"We managed to hold the stick from the middle: if I activate the local market role more. We keep in contact with our international customers with updates, even though their demand is affected. We be ready when export returns"*
>
> ***— Logistics Manager, Manufacturing Sector***

The crisis also prompted structural shifts in market positioning, particularly among logistics service providers. Terminals previously dependent on the 'Top 5' lines actively pursued small and medium-sized carriers — a bottom-up market strategy that, paired with adaptive vessel use, proved essential for maintaining operations. At the institutional level, longer-term diversification was pursued through new logistics corridors linking resource-rich African countries to Egyptian industrial zones, with the aim of positioning Egypt as an alternative regional logistics hub for African resources bound for European markets.

> *"If we had focused only on big lines, we would have died. But when we started working from bottom to top, we managed to stay alive."*
>
> ***— Marketing Manager, Container Terminal***

PRACTICES OBSERVED

- Activate local-market routes as a counterweight to export exposure
- Retain key customers through dedicated commercial treatment
- Apply hybrid commercial strategies (premium + value tiers, top-5 + long-tail carriers)
- Position the business around a unique value proposition — not just price

Logistics Alternatives

The RSB forced logistics managers to rapidly restructure both operational and commercial arrangements. Firms implemented a range of alternative strategies, including strengthening partnerships, internalising logistics activities, and adopting new network configurations. A major challenge emerged after shipping lines suspended Suez Canal transits, leaving firms with limited access to capacity. Companies responded by adopting NVOCC solutions — primarily through Chinese providers — to access feeder networks and alternative shipping capacity.

> *"The Gaza war forced first-time large-scale adoption of NVOCC feeder networks through Chinese logistics lines."*
>
> ***— Planning Manager, Shipping Line***

Road freight was similarly disrupted. Large-scale humanitarian convoys to Gaza diverted trucking capacity away from commercial use, sharply increasing road freight rates and forcing firms to reassess transport options. Several firms acquired critical transport activities in-house or formalised long-term partnerships with key providers, while at network level, hub-and-spoke strategies were used to maintain schedule reliability by consolidating cargo through protected hub ports.

> *"To stabilise capacity, we identified strong market partners controlling fleets and secured dedicated transport allocations during high-risk periods."*
>
> ***— Logistics Manager, Manufacturing***

PRACTICES OBSERVED

- Run evidence-based assessments of logistics alternatives before committing
- Develop partnerships with new service providers (NVOCC, regional carriers)
- Retain strong ties with existing partners — loyalty is a hedge during capacity scarcity
- Innovate logistics solutions (RORO, hub-and-spoke, internalised trucking) and institutionalise the winners

Redesign Supply Chains

Interruptions to global sourcing during the RSB disproportionately affected manufacturing firms. Operations dependent on continuous processes — particularly in sectors such as chemicals — were especially vulnerable due to their reliance on uninterrupted material flows

and limited tolerance for stoppages. SMEs faced additional exposure, as their constrained supplier bases and lower operational scale reduced their ability to absorb sudden sourcing disruptions.

In response, firms rapidly redesigned their supply chains to secure input continuity. A common strategy involved shortening supply lines by relocating critical inputs closer to production sites or shifting toward domestic sourcing. Backward integration was used to create an internal supply buffer, while localised supplier networks reduced delays and improved responsiveness. Strategic firms also established redundancy by pre-qualifying back-up suppliers to the same quality standards.

IN THEIR OWN WORDS

"I try to rely on Egyptian suppliers so I don't get delayed. Syrians in Egypt opened a fabric factory — so it's 'Syrian' but produced locally; they are good for me in some materials."—CEO, Manufacturing

"We now have two suppliers for the same item, same specs, same quality—so we can rotate between them: the usual supplier, or the crisis backup supplier." —Export Manager, Manufacturing

PRACTICES OBSERVED

- Establish alternative local / onshore supply chains for strategic inputs
- Duplicate supply sources and rotate volumes to keep backups warm
- Introduce risk-management clauses into new supplier contracts
- Score supplier risk-management capability during evaluation, not just price and quality

Innovative Products & Services

The RSB acted as a catalyst for innovation in products and services. At the firm level, innovation was frequently directed toward value-added offerings rather than volume expansion. SMEs facing domestic currency shortages repositioned themselves as creative partners — for example, by introducing specialised colour-matching services and on-site tinting to enhance customer value.

Within maritime logistics, shipping lines innovated at the service level, adjusting sailing frequencies, consolidating services, and flexibly resizing vessel capacities to absorb security risks and extended transit times.

At the institutional level, government authorities introduced their own service innovations. For the first time, tailored financial and operational incentive bundles were created to retain carriers during the crisis — combining pricing flexibility with procedural facilitation. The Suez

Canal Economic Zone (SCZone) offered an innovative suite of incentives including customs-tariff reductions, free-zone benefits, simplified berthing, fast-track loading/unloading, and reduced red tape, aiming to create a cost-efficient and time-efficient investment environment.

IN THEIR OWN WORDS

"Based on specific actions like introducing reduced fees, discounts, bonuses, and flexible pricing, and offering incentives like simplified berthing and fast-track loading/unloading processes." — Investment Manager, Government

"We've divided our products into ready-mixed products and base products for tinting systems. They measure the colour using a spectrophotometer or even a mobile scanner, and they can produce exactly the same colour on site." — CEO, Manufacturing

PRACTICES OBSERVED

- Focus innovation effort on customer-value creation, not volume growth
- Identify and aggressively sell the business's unique value during disruption
- Treat innovation as a market-winner during recovery, not a recovery-time luxury

Key Takeaways

- Survival under prolonged disruption requires moving from efficiency-driven to redundancy-driven operating logic.
- Domestic markets are not a fallback; they are a strategic buffer that, when activated early, can fund continued operations.
- Institutional actors (governments, port authorities) are now part of the innovation surface — incentive design is a resilience lever, not just an investment policy.

ROADMAP — THEME 02 SECTION

RESILIENCE ROADMAP

THEME 02 · ALTERNATIVE BUSINESS APPROACHES

PRE

01 Anticipation & Situation Awareness

SENSING · 3 elements

DURING

02 Alternative Business Approaches

RECONFIGURATION · DURING-DISRUPTION PHASE

New Business Models

- JIT → redundancy planning
- Flex shipping strategies
- Take over partner roles
- New business philosophies

Markets Diversification

- Activate local-market routes
- Retain key customers
- Hybrid commercial strategies
- Unique value proposition

Logistics Alternatives

- Evidence-based assessments
- NVOCC & regional partners
- Strong ties with partners
- Institutionalise winners

Redesign Supply Chains

- Onshore/local supply
- Duplicate & rotate sources
- Add risk clauses
- Score supplier risk

Innovative Products & Services

- Customer-value creation
- Sell unique value
- Innovation at exec level
- Innovation as market-winner

5 elements · 20 practices

03 Inter / Intra-Org Integration

SEIZING · 3 elements

POST

04 Capacity Extension & Multi-Sourcing

RECONFIGURATION · 3 elements

05 Institutionalising Resilience

GOVERNANCE · 2 elements

CONTINUOUS

06 Learning Mechanisms for Business Resilience

META-CAPABILITY · 3 elements

Pre-disruption | During-disruption | Post-disruption

THEME

03

DURING · COORDINATION

Effective Inter / Intra-Organisational Integration

Operational continuity depends less on individual performance and more on coordinated action across functions, partners, and customers.

THEME 03 • DURING DISRUPTION • CAPABILITY: SEIZING

Effective Inter / Intra-Organisational Integration

The RSB necessitated a fundamental shift in communication orientation across the logistics network, moving actors away from competitive posturing toward a collective survival and collaboration mindset. Effective integration — externally with partners, internally across functions, and downstream with customers — became essential for mounting timely and coordinated responses.

Integration extended well beyond formal coordination mechanisms and contractual arrangements. Managers consistently emphasised that sustained shared values and trust-based relationships were what actually enabled rapid alignment and joint problem-solving under trade-interruption conditions. The theme is structured around three sub-themes: intra-organisational communication, partner collaboration, and customer integration.

> *"If customers collapse, we will collapse before them. Profitability, turnover, continuity — they are all interconnected."*

Intra-Organisational Communication

Across all interviews, fast and reliable cross-functional communication emerged as a critical enabler of effective response. Close integration between functions generated the decision velocity required to manage sudden changes in shipping routes or material delivery, particularly in perishable categories where delays trigger cascading operational and reputational consequences.

Operational integration was further institutionalised through structured, cross-functional coordination practices — pre-vessel operations meetings, daily stand-ups, post-departure debriefs. Importantly, these practices were not invented during the RSB but built on coordination routines first established during COVID-19. Decision speed was reinforced by decentralised governance, with authority delegated to functional leaders so they could respond and mutually support each other when specific units came under stress.

IN THEIR OWN WORDS

"The synergy between quality, production, and logistics is vital because a single error — like a delay in shipping — can lead to contaminated products and in turn reputational disaster or national export bans." — Logistics Manager, Manufacturing

"Before each vessel, our teams (marketing, yards, container handling, planning) hold meetings about: How will it operate? What are the scenarios? What are the risks?" — Yards Manager, Container Terminal

"The flow of information remained strong, aided by technology such as mobile communication, WhatsApp, and later Zoom meetings, which suddenly became an essential part of daily operations." — Logistics Manager, Manufacturing

PRACTICES OBSERVED

- Enhance synergy between internal teams; embed a multi-functional culture
- Hold frequent team meetings in both formal and informal formats
- Decentralise decision-taking and accountability to functional leaders
- Streamline information flow with collaboration technology — extend COVID-era digital habits

Partner Collaboration

Strong consensus emerged that deep collaboration with supply-chain partners — shipping lines, freight forwarders, customs-clearance agents, and container terminals — was what kept material flows moving during the RSB. Crisis-time decision-making depended less on formal data and more on experiential knowledge embedded in direct relationships with partners. Collaboration also extended to network-level problem-solving, with regional ports

cooperating to redistribute cargo across alternative gateways and reduce exposure near Bab El-Mandab.

Importantly, collaboration during the crisis expanded beyond traditional supply-chain partners to include competitors. Survival required ecosystem-wide coordination, rendering zero-sum competition ineffective. Competing ports cooperated to manage vessel berthing and rerouting during peak disruption, and rival commercial operators collaborated to implement RORO alternatives amid soaring freight rates and insurance costs.

> *"In the logistics sector and during the Suez-Canal Blockage, the factory relies on deeply entrenched relationships with customs-clearance agents and shipping lines to keep material flow uninterrupted."*
>
> *— Logistics Manager, Manufacturing*

PRACTICES OBSERVED

- Build solid relationships with partners and customers equally — neither is subordinate
- Remove unnecessary intermediaries and keep direct connections with strategic counterparts
- Enhance information accuracy and real-time sharing across the network
- Plant loyalty in service providers — it is the currency drawn down when capacity is scarce
- Collaborate with competitors when systemic disruption makes coopetition the only viable strategy

Customer Integration

A customer-centric approach emerged as a widespread response among interviewed firms. Managers demonstrated clear awareness of how transit-time disruptions directly affected customers' working-capital cycles and revenue, with several explicitly linking their own organisational survival to the continuity of their customers' businesses. Firms prioritised intensified communication with customers to co-develop alternative solutions, rather than emphasising transactional efficiency.

Effective customer integration required nuanced understanding of customer preferences and value orientations. Firms segmented customers by primary concern — price-sensitive, service-focused, or relationship-based — and tailored both communication and offering accordingly. The shift was from selling 'a service' to selling 'a solution to the client's actual problem.'

IN THEIR OWN WORDS

"If customers collapse, we will collapse before them. Profitability, turnover, continuity — they are all interconnected." — CEO, Freight Forwarder

"I don't go in just to offer 'a service.' I go in with a solution to his real problem. My core principle is: I do not start with price, and I do not start with generic 'service' talk. I start with a solution." — Logistics Manager

PRACTICES OBSERVED

- Help customers retain business and prevent collapse — your continuity depends on theirs
- Provide solutions and flexibility, not standardised services
- Understand customers' nature, needs, and primary concerns (price, service, relationship)
- Identify and explicitly protect key accounts during the disruption
- Maintain solid and frequent communication, especially when there is bad news to deliver

Key Takeaways

- Decision velocity, not analytical depth, distinguishes resilient responses — and velocity comes from cross-functional integration and decentralised authority.
- Trust-based relationships with partners are a usable asset during disruption; they are built only in calm periods and drawn down in crisis.
- Coopetition is now standard practice in the corridor — competitor coordination is part of the survival playbook, not an exception to it.
- The customer's resilience is your resilience. If a major customer fails, you lose more than revenue — you lose the relational capital that keeps you in business

ROADMAP — THEME 03 SECTION

RESILIENCE ROADMAP

THEME 03 · INTER / INTRA-ORG INTEGRATION

PRE

01 Anticipation & Situation Awareness

SENSING · 3 elements

DURING

02 Alternative Business Approaches

RECONFIGURATION · 5 elements

03 Inter / Intra-Org Integration

SEIZING · DURING-DISRUPTION PHASE

Intra-Org Communication

- Multi-functional culture
- Frequent team meetings
- Decentralise decisions
- Streamline with collab tech

Partner Collaboration

- Build solid relationships
- Remove intermediaries
- Enhance info sharing
- Plant loyalty in providers
- Coopetition with competitors

Customers Integration

- Help customers retain biz
- Provide solutions
- Understand customer needs
- Protect key accounts
- Frequent communication

3 elements · 14 practices

POST

04 Capacity Extension & Multi-Sourcing

RECONFIGURATION · 3 elements

05 Institutionalising Resilience

GOVERNANCE · 2 elements

CONTINUOUS

06 Learning Mechanisms for Business Resilience

META-CAPABILITY · 3 elements

Pre-disruption | During-disruption | Post-disruption

THEME

04

DURING · CAPACITY

Investing in Capacity Extension & Multi-Sourcing

Targeted structural investments stabilise operations and reduce dependency through expanded capacity and multi-sourcing strategies.

THEME 04 • POST-DISRUPTION / LONG-TERM • CAPABILITY: RECONFIGURATION

Investing in Capacity Extension & Multi-Sourcing

Despite the substantial costs involved, structural investment strategies emerged as a widely adopted response among interviewed firms. Under conditions of severe disruption, expanding capacity through new facilities was often perceived as a more viable and decisive option than attempting to incrementally enhance existing systems. These investments were not viewed solely as short-term responses to the Suez Canal interruptions; they were treated as strategic enablers of long-term recovery and viability.

The theme is structured around three sub-themes: government support and commitment, new facilities and infrastructure investment, and redundant capacity coupled with regaining operational control.

> *“Our current quay cannot accommodate the new vessel size without enormous cost. This is why building a completely new quay with modern specifications is not a luxury — it is a necessity.”*

Government Support & Commitment

Government and institutional actors played a decisive role during the RSB, not as constraints but as active participants in network-level seizing. Container Terminals acted in concert to facilitate administrative flexibility, provide incentives, and attract alternative shipping capacity. By inviting NVOCC operators, simplifying procedures, and supporting stranded vessels, government actors effectively expanded the opportunity set available to private firms.

Beyond emergency response, the institutional commitment extended to a long-term strategic vision: repositioning the Suez Canal region as an integrated logistics and industrial hub. Investments in port expansion, hinterland connectivity, and administrative reform have been complemented by incentive schemes,

"The Suez Canal has a priceless location, but to turn that location into a genuine hub it's not enough to have vessels simply passing by. The fleet has to stop here, discharge cargo, reload, and operate within a genuine industrial and logistics ecosystem around the Canal."

— Investment Manager, Government Unit

regulatory flexibility, and the establishment of one-stop-shop governance structures designed to reduce bureaucratic friction for investors and carriers.

PRACTICES OBSERVED

- Assign a logistics focal point to resolve bottlenecks for strategic cargoes
- Establish a one-stop shop to facilitate investor paperwork and approvals
- Invest in highly integrated industrial zones adjacent to ports
- Create end-to-end supply-chain centres that combine industry, logistics, and customs
- Use the corridor's strategic location to innovate new logistics solutions and services

New Facilities & Infrastructure

Ports located at the canal's entrance had historically benefited from their role as first-call hubs for cargo handling and service provision prior to canal transit. This advantage diminished rapidly following shipping lines' decisions to reroute via the Cape of Good Hope. In response, ports pursued capacity-expansion strategies aimed at restoring competitiveness under the new network configuration — including deepening operations, constructing new quays designed to accommodate the largest vessels, and extending internal railway infrastructure to connect with inland depots and neighbouring ports.

Similar capacity-building responses were observed at the manufacturing level. Many firms invested in new production facilities to support market diversification and supply security. One chemicals manufacturer built an entirely new factory producing an alternative oil product, enabling both local-market sales and internal backup sourcing in the event of import

disruption. A seafood exporter expanded production capacity by introducing a lobster-holding facility, broadening the product portfolio and strengthening access to local markets as an alternative to exports.

IN THEIR OWN WORDS

> *"Our current quay cannot accommodate the new vessel size without enormous cost. This is why building a completely new quay with modern specifications is not a luxury — it is a necessity."* — Operational Manager, Container Terminal

PRACTICES OBSERVED

- Extend the capacity of existing facilities where the underlying design still has headroom
- Build new facilities where existing assets cannot accommodate modern vessel/equipment specifications
- Cope with modern specification and technology in any new facility built
- Invest in infrastructure that connects supply-chain nodes (rail, intermodal, dry depots)
- Use new facilities to serve newly diversified markets, not only the original customer base

Redundant Capacity & Regain Control

Capacity extension was not limited to physical asset expansion or new service development. Firms built resource buffers by exerting greater control over logistics execution. Beyond sourcing diversification, firms actively sought to regain control over logistics flows by internalising previously outsourced transport activities. Motivated by heightened security risks and service unreliability, several companies invested in dedicated trucking fleets and in-house logistics systems.

What initially emerged as a crisis response evolved into a permanent operating model characterised by improved coordination and enhanced operational control. Hybrid infrastructure and flexible routing — utilising the firm's own truck fleet alongside external agencies to handle peaks in import/export — emerged as the dominant pattern. The decision to own a dedicated truck fleet, originally born of earlier security crises, has now been institutionalised across multiple participating firms as a permanent, generalised operating model for lower risk and better control.

IN THEIR OWN WORDS

> *"The same logic drove the decision to own a truck fleet. So we decided to bring in our own trucks and built a new system, and we turned what started as a crisis response into a permanent, successful operating model that we later generalised."* — Logistics Manager, Manufacturing

"When we change a strategy because of a crisis, many of those changes stay and benefit us in future scenarios. This is what we'd call institutionalising resilience: if a change helps in the current crisis and can deliver future benefits, we keep it and build on it." — Logistics Manager, Manufacturing

PRACTICES OBSERVED

- Employ multi-line shipment splitting to avoid single-carrier exposure
- Establish connections with more than one logistics agent per lane
- Qualify multiple suppliers to the same product-quality specifications
- Rotate business between back-up suppliers to keep them operationally warm
- Facilitate access to multiple strategic ports for cargo redistribution

Key Takeaways

- Capacity investment during crisis is not waste; it is the embedding of resilience into the operating model.
- Government action is now part of the corridor's seizing capability — public-sector commitment shapes private-sector return on capital.
- Internalised logistics control, originally a crisis workaround, is being institutionalised as a permanent operating model in the region.
- The most durable investments are those that both stabilise the current disruption and generate future value (e.g., a backup factory that also sells into the local market)

ROADMAP — THEME 04 SECTION

RESILIENCE ROADMAP

THEME 04 · CAPACITY EXTENSION & MULTI-SOURCING

PRE

01 Anticipation & Situation Awareness

SENSING · 3 elements

DURING

02 Alternative Business Approaches

RECONFIGURATION · 5 elements

03 Inter / Intra-Org Integration

SEIZING · 3 elements

POST

04 Capacity Extension & Multi-Sourcing

RECONFIGURATION · POST-DISRUPTION PHASE

Government Support & Commitment

- Logistics focal point
- One-stop shop
- Adjacent industrial zones
- End-to-end SC centres
- Innovate corridor logistics

New Facilities & Infrastructure

- Extend existing capacity
- Build modern facilities
- Modern tech specifications
- Connect SC nodes (rail)
- Serve diversified markets

Redundant Capacity & Regain Control

- Multi-line shipment splitting
- Multiple logistics agents
- Multi-source qualification
- Rotate backup suppliers
- Multiple strategic ports

3 elements · 15 practices

05 Institutionalising Resilience

GOVERNANCE · 2 elements

CONTINUOUS

06 Learning Mechanisms for Business Resilience

META-CAPABILITY · 3 elements

Pre-disruption | During-disruption | Post-disruption

THEME

05

POST · MATURITY

Institutionalising Resilience toward Agile Decision-Making

Resilience is embedded through proactive risk monitoring and agile decision-making — supported by centralised or distributed governance.

THEME 05 • POST-DISRUPTION / LONG-TERM • CAPABILITY: RECONFIGURATION / GOVERNANCE

Institutionalising Resilience toward Agile Decision-Making

The increasing frequency of crises over the past decade has reshaped managerial perceptions of risk management and embedded a business-resilience mindset across organisations in the corridor. The RSB acted as a catalyst for a marked shift in risk-management practice, with managers demonstrating heightened engagement in anticipatory activities — scenario planning, pre-emptive risk assessment, and structured cross-functional review — embedded in everyday operational routines rather than triggered ad hoc.

Importantly, this recognition extended into an ongoing debate around organisational design: should risk be governed through a dedicated, centralised unit, or managed in a more decentralised manner across individual departments? The theme captures both the cultural transition toward proactive resilience and the structural debate about where in the organisation it should sit.

> *"The traditional Egyptian approach was always: problem happens, then we move. Not: we expect the problem, and prepare."*

Risk Management & Resilient Culture

The RSB was described as the first disruption of its scale to directly impact the regional logistics network. It catalysed a marked shift in risk-management practice across firms. Rather than relying on ad hoc or reactive responses, firms increasingly adopted proactive management approaches embedded in everyday operational routines. New coordination practices were introduced at the operational level — for example, daily stand-up meetings in which cross-functional teams discuss emerging operational and supply-chain risks and agree preventive actions.

This evolution extends beyond procedural change. It signals a deeper transformation in organisational culture toward agile crisis management and embedded resilience. Even where firms describe risk management as 'still developing' in the Egyptian context, the direction of travel is consistent: from event-driven response to continuous, anticipatory management of risk as a daily managerial behaviour.

> *"Risk management has become a daily behaviour, not just papers and policies. Before each vessel, you hold a meeting: how will it operate? What are the scenarios? What are the risks? After each vessel, you review performance."*
>
> ***— Yards Manager, Container Terminal***

PRACTICES OBSERVED

- Embed a risk-management culture in daily routine — meetings, briefings, debriefs
- Extend the risk-management culture across the firm's value and supply chain
- Qualify middle managers explicitly to manage risk and resilience, not only operations
- Empower second-line leadership through trust-building and responsibility delegation

Dedicated Risk-Management Team

The findings reveal two dominant governance approaches. Some organisations advocate the establishment of dedicated risk-management units that span multiple functions; others favour decentralised responsibility within functional operations. The decentralised model treats risk management as a distributed function — not formalised as a stand-alone department but integrated into existing managerial and operational structures, with coordination occurring at senior-management level to ensure strategic alignment.

In contrast, several firms moved decisively toward formal crisis-management structures during the RSB. One participant described the creation of a dedicated crisis-operations cell bringing together key decision-makers across headquarters and remote operational sites. This structure prioritised speed, real-time information sharing, and delegated authority. A complementary view holds that formal risk-management units have value under current conditions but remain uneven in scope and maturity across the region — with a tendency to prioritise financial risks over a more holistic treatment of operational, geopolitical, and supply-chain exposure.

IN THEIR OWN WORDS

"So inside the supply chain, logistics is one part, procurement is another, production is another, processing is another. But 'risk' is not labelled as a formal department; it is more of a function distributed inside the way we work." — Logistics Manager, Manufacturing

"Like everyone else, we operated within a state of uncertainty, but we tracked developments continuously. We established what was essentially a crisis-operations cell, assembling key decision-makers across all operational sites." — Logistics Manager, Manufacturing

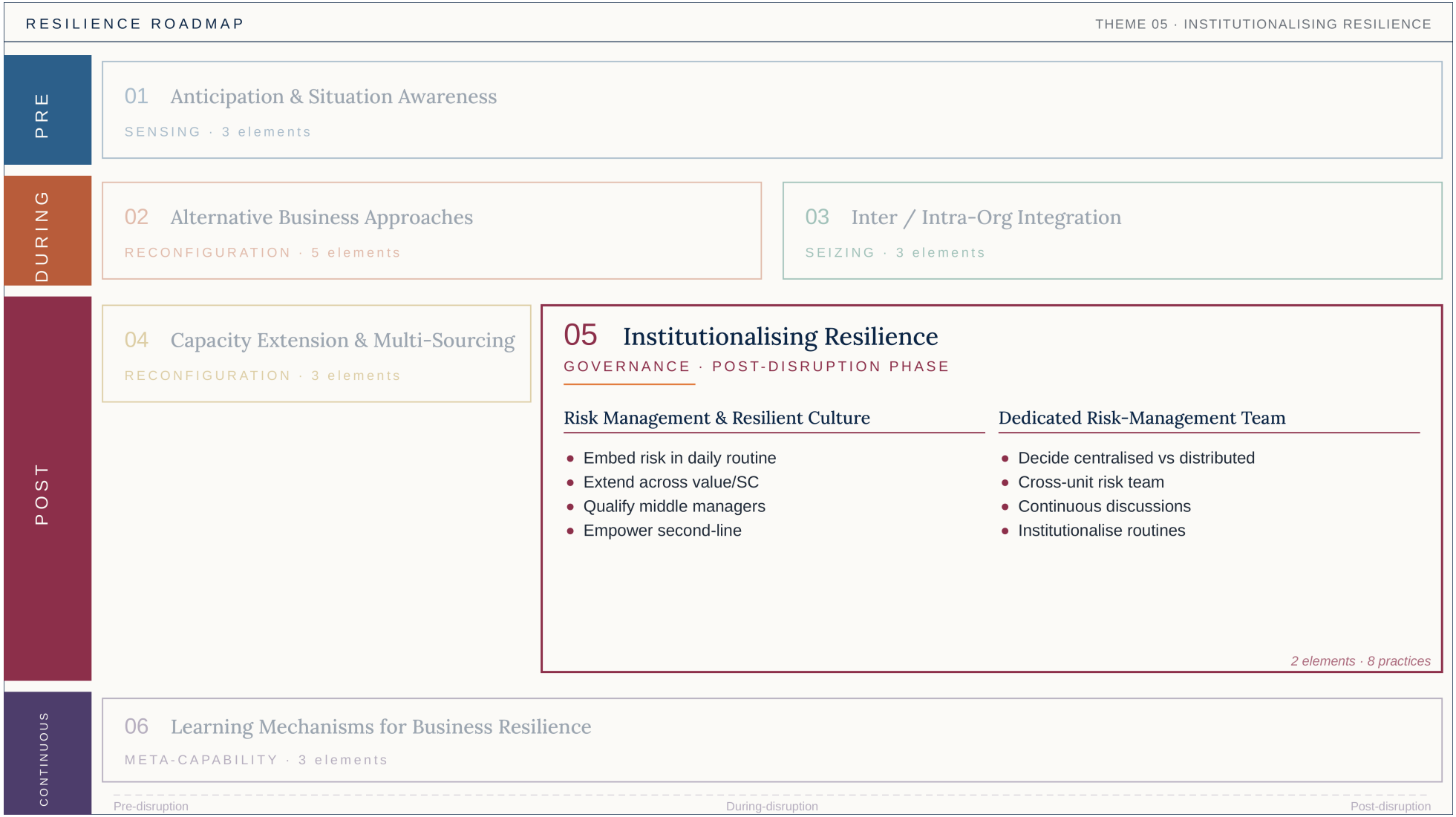
PRACTICES OBSERVED

- Decide deliberately between centralised and distributed risk governance — both work, but only when explicit
- Where centralised: dedicate a cross-unit team responsible for risk monitoring, scenario maintenance, and post-event review
- Where distributed: ensure continuous risk-related discussions (formal and informal) flow across teams
- Institutionalise the temporary crisis routines that worked — don't dismantle them when the immediate crisis passes

Key Takeaways

- The shift from reactive to anticipatory risk management is irreversible — the question is no longer whether to institutionalise resilience, but how.
- Both centralised and decentralised governance models can work, but only if the choice is deliberate and supported by explicit authority and information flows.
- Temporary crisis structures (like daily stand-ups, crisis cells, decentralised authority) are the highest-return institutionalisation targets. They were built for the disruption — keep what worked.
- Middle management is the binding constraint. Resilience cultures live or die based on whether mid-level managers are qualified and empowered to lead under uncertainty

ROADMAP — THEME 05 SECTION



THEME

06

CONTINUOUS · LEARNING

Learning Mechanisms for Business Resilience

Continuous learning underpins long-term adaptability — drawing on past disruptions, real-time experience, and partner ecosystems.

THEME 06 • PRE / DURING / POST-DISRUPTION • CAPABILITY: META-CAPABILITY (CUTS ACROSS SENSING, SEIZING, RECONFIGURING)

Learning Mechanisms for Business Resilience

Across the interviews, informants consistently emphasised that effective knowledge creation and transfer were essential to mobilising the capabilities described in the preceding themes. Learning enabled firms to draw on prior crisis experience, coordinate more effectively with stakeholders, implement novel business solutions, and support recovery processes. Resilience in the corridor was not driven solely by structural or strategic adjustments — it was driven by the capacity of organisations to absorb, disseminate, and apply knowledge under uncertainty.

Three sub-themes capture this learning capability: learning from previous incidents (pre-disruption), learning to facilitate business response (during-disruption), and continuous learning to support recovery (post-disruption). Together they position learning as a meta-capability — one that underpins sensing, seizing, and reconfiguring across all phases of disruption.

> *"Learning is highly increasing and the company is making use of the crisis and learning from it, starting from the first-line employee all the way to the top."*

Learn from Previous Incidents

Rather than treating the RSB as an unprecedented shock, interviewees described drawing on prior disruption experiences to activate already-rehearsed scenarios and response routines. Cumulative learning enabled organisations to operate under an assumption of continuous change, where multiple disruption scenarios were anticipated as part of normal operations. Following COVID-19, several firms reported adjusting to a new operating reality by learning from experience rather than waiting for stability to return.

Learning from past incidents also informed proactive measures designed to mitigate future risks. One participant described how experience from a major vessel fire — where insurance liabilities were difficult to assign — led directly to the creation of joint insurance arrangements with clients, institutionalising shared risk ownership and improving preparedness for similar events. Effective resilience required learning to be activated across all organisational levels and through both formal and informal channels.

IN THEIR OWN WORDS

"So when Gaza war came, for example: It wasn't a 'totally new shock' for us. The scenario of 'political/military conflict that affects logistics' had already happened before, and we had practiced it." — Logistics Manager, Manufacturing

"Learning is highly increasing and the company is making use of the crisis and learning from it, starting from the first-line employee to the top line." — Regional Manager, Shipping Line

PRACTICES OBSERVED

- Treat each disruption as data for the next — keep post-event reviews structured and accessible
- Build institutional memory across levels, not just at the senior management layer
- Use prior incident learning to shape contractual and insurance arrangements, not only operational playbooks

Learning to Facilitate Business Response

Both formal and informal learning practices were mobilised across organisational functions to support response and adaptability during the RSB. Cross-functional training initiatives enabled employees to substitute for one another, particularly across export, logistics, and domestic-sales functions.

> *"Learning from the Red Sea crisis happened naturally. Even a warehouse worker learns: when inventory becomes much larger than normal, they learn how to organise and work more efficiently with the logistics and procurement teams."*
>
> ***— Export Manager, Manufacturing***

Learning also occurred organically through experiential processes during the disruption — operational pressures triggered learning-by-doing, with employees adapting their practices as conditions evolved. Beyond internal learning, knowledge creation and transfer extended to external stakeholders and customers to maintain business continuity. The introduction of the new ACID (Advance Cargo Information Declaration) system in the early stage of the RSB

required firms to rapidly acquire new regulatory knowledge and disseminate it across the network. One participant invested significant effort in understanding the system and then provided mandatory training to clients, customs brokers, and international agents in order to prevent shipment confiscation. Learning was also linked to strategic reorientation, with firms using disruption insights to reassess customer values, demand patterns, and post-crisis positioning.

PRACTICES OBSERVED

- Run cross-functional training so staff can substitute across exposed functions
- Make learning-by-doing visible by giving employees space to adapt operational routines mid-crisis
- Extend training programmes to customers and regulatory counterparts when new compliance regimes emerge
- Capture market-learning insights post-crisis and feed them into commercial repositioning

Recovery Needs Continuous Learning

Firms consistently expressed strong confidence in workforce development as a cornerstone of sustainable recovery. Rather than viewing the downturn as a period of inactivity, many organisations deliberately leveraged the disruption to upskill and re-qualify employees, anticipating a strong post-crisis recovery once geopolitical tensions subsided. The quiet early days of the RSB were used for organisational renewal and human-capital development.

Workforce development was pursued through training on international standards and certification regimes. Compliance with stringent sustainability and food-quality standards — particularly those required for EU market access — was treated not as a compliance burden but as a strategic investment in long-term competitiveness. Beyond firm-level initiatives, informants highlighted systemic challenges related to skills availability: a shortage of logistics and supply-chain education within university programmes, and the establishment of specialised logistics colleges in the Suez Canal region as a critical regional response.

IN THEIR OWN WORDS

> *"The EU path alone cost us roughly five million until today. But we paid it, got EU approval, exported to Europe, have experience, and train staff, and you have people who travel and see how standards evolve — you can adapt to any situation."* — Logistics Manager, Manufacturing

> *"We don't just need port management — we need people who understand supply chain."* — Yards Manager, Container Terminal

PRACTICES OBSERVED

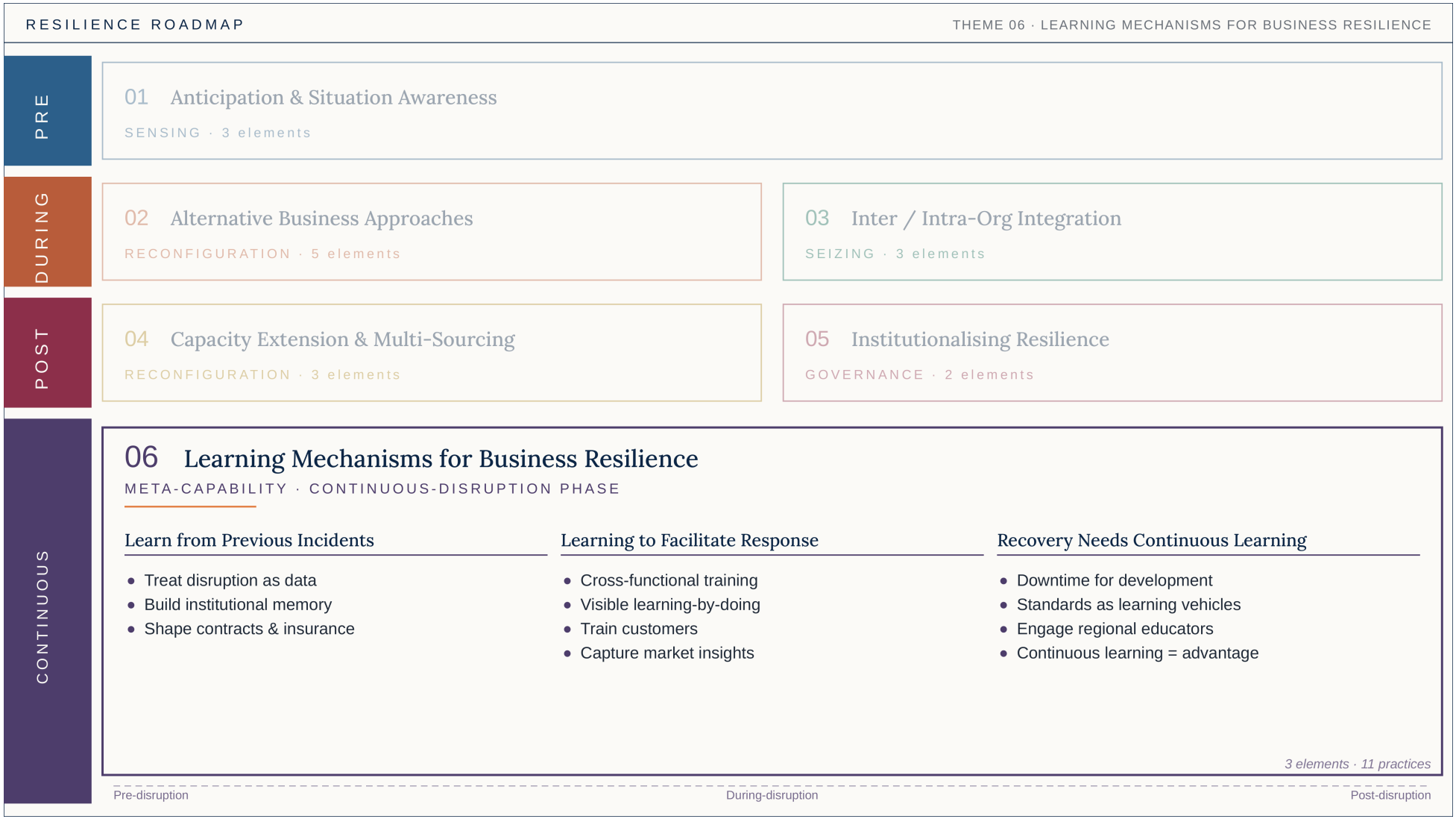
- Treat disruption downtime as a development window for the workforce

- Use international standards and certification (EU food, ESG, sustainability) as strategic learning vehicles
- Engage with regional educational institutions to address structural skills gaps
- Treat continuous learning as a competitive advantage, not an HR expense

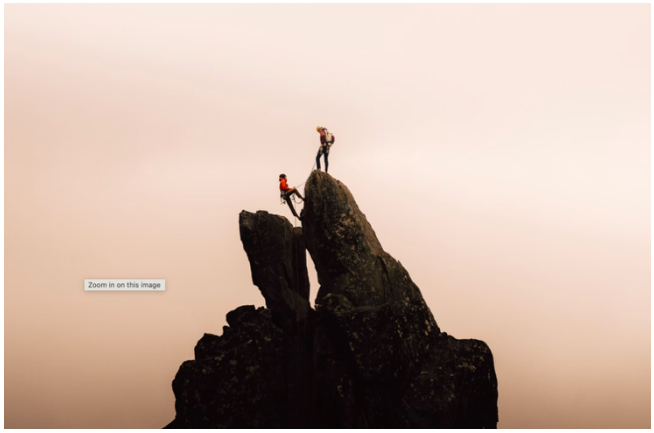
Key Takeaways

- Learning is the connective infrastructure that orchestrates the other five capabilities across time — it is what makes resilience repeatable.
- Past crisis experience is the most under-used asset in most organisations. Captured properly, it shortens response times in the next crisis from weeks to days.
- Learning must extend beyond firm boundaries: when regulation or market access changes, your customers and partners need to learn too.
- Workforce upskilling during downturns is not a soft investment — it is the operational basis for any post-crisis recovery

ROADMAP — THEME 06 SECTION



The Supply Chain Resilience Roadmap



FROM CRISIS RESPONSE TO COMPETITIVE ADVANTAGE

The six themes presented in the previous chapters are not standalone capabilities. They form an integrated resilience system that operates across three sequential — but overlapping — phases of disruption. The Supply Chain Resilience Roadmap below maps the six capabilities to those three phases, providing a practical structure for executives planning the next eighteen to thirty-six months of resilience investment.

Importantly, the roadmap is not a linear recipe. The Suez Canal corridor's recent experience makes clear that anticipation, response, and reconfiguration overlap continuously: organisations that learn and reconfigure most aggressively during one disruption are precisely those best positioned to anticipate and seize during the next.

Phase 1 — Anticipation & Alignment

PRE-DISRUPTION / CONTINUOUS • CAPABILITY ANCHOR: SENSING • LINKED THEMES: THEME 01, THEME 06

Build network-level situation awareness as a daily managerial routine. Maintain a living playbook of corridor disruption scenarios. Treat insurance assessments, government decisions, and partner positioning as primary risk inputs. Embed learning-from-experience reviews so each crisis materially shortens response time for the next.

PRIORITY ACTIONS

- Stand up a corridor risk dashboard that integrates economic, political, and operational signals
- Codify scenario playbooks for the four most plausible disruption types facing the corridor
- Run quarterly cross-functional tabletop exercises against those scenarios
- Institutionalise after-action reviews for every operationally material incident
- Identify and pre-qualify alternate suppliers, carriers, and routes before they are needed

Phase 2 — Stabilise & Adapt

DURING DISRUPTION • CAPABILITY ANCHOR: SEIZING • LINKED THEMES: THEME 02, THEME 03

When disruption hits, prioritise continuity over efficiency. Reconfigure business models toward redundancy-based planning, activate domestic markets and alternative carriers, and protect material flows through tightened intra-organisational coordination and trust-based partner collaboration — including, where necessary, with competitors. Treat customer continuity as a proxy for your own.

PRIORITY ACTIONS

- Switch operating logic from just-in-time to just-in-case for exposed lanes
- Activate domestic-market commercial channels as a stabilising buffer
- Engage NVOCC and mid-tier carriers to fill the gap left by the 'Top 5'
- Stand up a daily cross-functional decision forum with delegated authority
- Open direct lines with key customers and co-design service-level adjustments

Phase 3 — Reconfigure & Strengthen

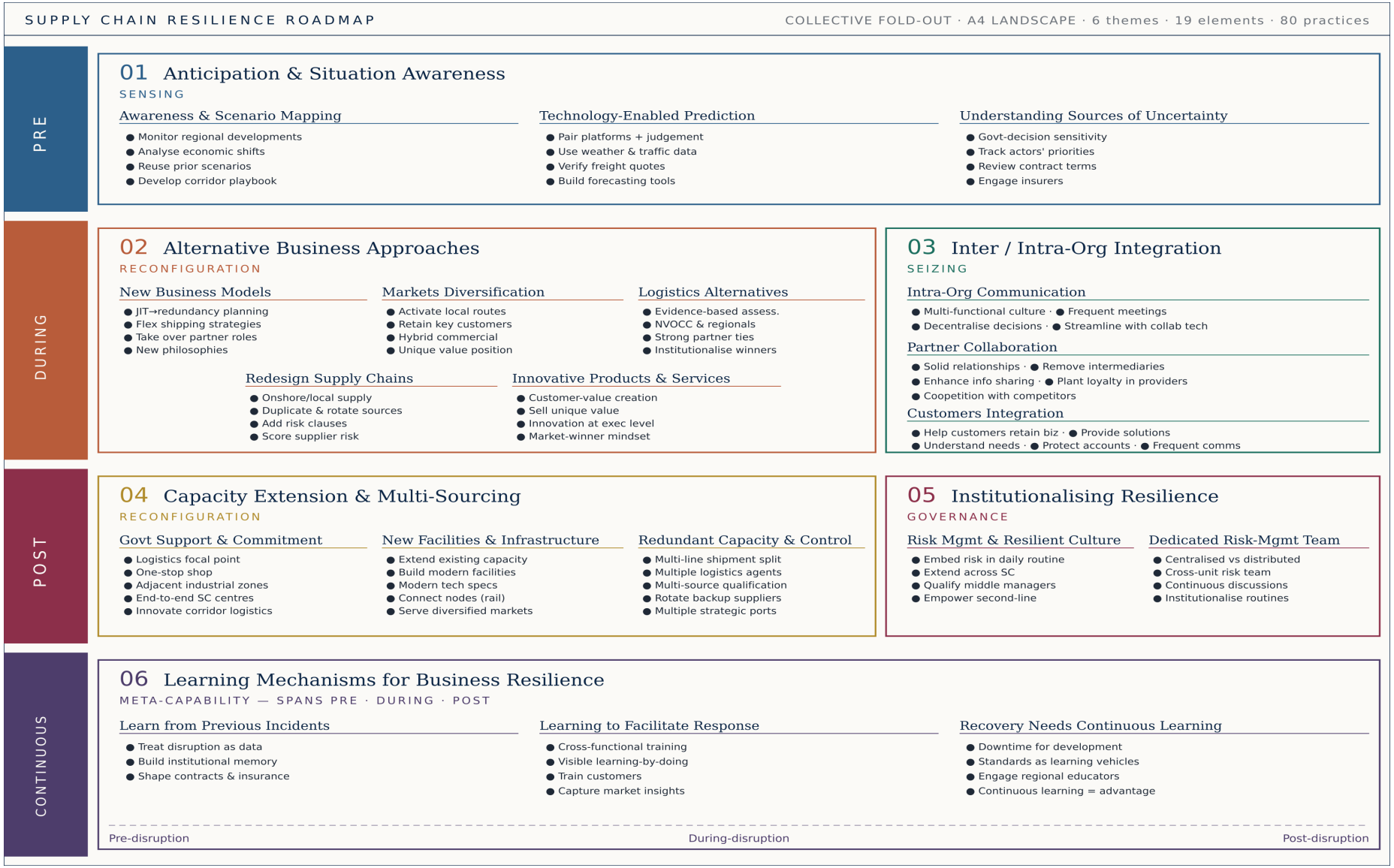
POST-DISRUPTION / LONG-TERM • CAPABILITY ANCHOR: RECONFIGURATION • LINKED THEMES: THEME 04, THEME 05, THEME 06

Translate temporary crisis arrangements into permanent capability. Invest in physical capacity, multi-sourcing, and internalised logistics where the crisis exposed structural fragility. Institutionalise the governance routines (crisis cells, daily stand-ups, post-event reviews) that proved their value. Use the downturn window to upskill staff against international standards so recovery is met with stronger capability than the disruption began with.

PRIORITY ACTIONS

- Convert successful crisis routines into permanent operating procedures
- Approve targeted capital investment in capacity, infrastructure, and dedicated logistics assets
- Decide explicitly between centralised and distributed risk governance — and resource the choice
- Build workforce capability against EU/US compliance standards and ESG requirements
- Engage regional educational institutions to address the structural shortage of supply-chain talent

SUPPLY CHAIN RESILIENCE ROADMAP — COLLECTIVE FOLD-OUT



Looking Ahead

TRENDS SHAPING THE NEXT PHASE OF CORRIDOR RESILIENCE

The Red Sea Blockage was the trigger event for this report, but the report's conclusions are not specific to the Red Sea. Across every interview conducted, a single proposition emerged: the operating environment of the Suez Canal corridor has structurally changed. The RSB is not an episode bracketed by a 'before' and 'after.' It is one layer in a continuing stack of disruptions, and the corridor's actors are now planning their businesses around the assumption that the stack keeps growing.

This section identifies the trends that participants believe will define the next phase of corridor resilience, and the open questions that the ResiLog team will be tracking in subsequent editions of this report.

Permanent geopolitical volatility

Even when the immediate Red Sea security situation stabilises, the broader region — Gaza, the Bab El-Mandab Strait, Iran–US tensions, the Strait of Hormuz — remains exposed. Corridor actors are no longer planning around 'when normal returns'; they are planning for permanent route, capacity, and insurance volatility.

The fragmentation of global carrier networks

The withdrawal of the 'Top 5' carriers from the corridor opened structural space for NVOCC operators, Chinese carriers, and mid-tier lines. Several terminals reported record throughput

by adapting to the new mix. The competitive map of the corridor will not revert; terminals and forwarders will continue to need a much longer-tail commercial strategy than they ran pre-2023.

Insurance & compliance as decisive route determinants

Underwriter classifications and market-access compliance (particularly US/EU) increasingly drive route decisions more than fuel or freight economics. Resilience planning that ignores these institutional layers will continue to mis-price corridor risk.

Currency, capital, and traditional financial governance

Currency liberalisation and devaluation produced an economic shock larger than COVID-19 for some participants, widening price gaps and constraining import-dependent operations. Government-affiliated entities continue to face traditional accounting constraints that make TCO-rational investments politically difficult (Total Cost of Ownership). Both are structural drags on resilience investment that policy reform could materially loosen.

Sustainability as an export-market requirement

Sustainability has moved from Corporate Social Responsibility slogan to operational gating criterion. EU and US market access increasingly requires ESG (Environmental, Social, and Governance), carbon-footprint, and tier-1/tier-2 supplier reporting. The Suez Canal corridor's structural carbon advantage — as the shortest route — is a strategic asset, conditional on the corridor itself meeting modern environmental standards (shore power, electric equipment, integrated rail).

The supply-chain talent gap

Across every layer of the network — port management, freight forwarding, manufacturing, government authority — informants reported a structural shortage of professionals trained in modern, integrated supply-chain management. The establishment of regional logistics colleges is an early response, but the gap will define the corridor's resilience ceiling for the next decade.

Egypt as an integrated logistics hub, not a transit route

The strategic ambition described by the SCZone is to evolve Egypt from a transit corridor into an integrated logistics-and-industrial hub — connecting African resource economies to European and Asian end-markets via Egyptian industrial zones. The success of that ambition depends on the same six capabilities described in this report, applied at national policy scale.

Recommendations

The recommendations below translate the six themes into specific actions for the four stakeholder groups whose decisions most shape corridor resilience: executive leadership, operations and logistics managers, government and regulatory authorities, and educational/professional institutions.

For Executive Leadership

- Treat resilience as a permanent capital allocation line, not a contingency reserve. Crisis-driven investments should be evaluated on their combined disruption value and long-term operating value.
- Make a deliberate choice between centralised and distributed risk governance — and resource the choice with budget, authority, and reporting lines.
- Build the corridor scenario playbook at board level. Multinational firms have it. Most regional firms do not. The investment is small relative to the operational upside.
- Protect customer relationships as you would protect physical assets. Their resilience is your resilience.

For Operations & Logistics Managers

- Institutionalise pre-vessel meetings, daily stand-ups, and post-event debriefs. These are the highest-return resilience routines observed in the dataset.
- Pre-qualify alternate suppliers, carriers, and routes. Rotate volumes to keep them operationally warm.
- Move from single-carrier exposure to multi-line shipment splitting on strategic lanes. Loyalty within partnerships is more durable than dependency on dominant ones.
- Maintain direct relationships with shipping lines, customs agents, and key customers. Intermediation reduces decision velocity in crisis.
- Treat your customers' continuity as a planning input. Segment them by primary concern and design crisis-time service offers accordingly.

For Government & Regulatory Authorities

- Sustain the one-stop-shop investor model and extend it across the corridor's institutional landscape.

- Reduce regulatory uncertainty. The interview evidence is consistent: sudden government interventions are perceived as a greater risk source than trade disruption itself.
- Continue to align incentive design with corridor resilience — pricing flexibility, simplified berthing, fast-track loading/unloading, free-zone benefits.
- Make the corridor's sustainability advantage real and visible — shore power, electric port equipment, integrated rail — so it can be claimed in EU/US market access conversations.

For Educational & Professional Institutions

- Expand specialised supply-chain and logistics programmes at university level. The talent gap is the binding constraint on corridor resilience over the next decade.
- Build joint industry-academia learning programmes that channel post-event learning back into curriculum design.
- Develop certification pathways aligned with EU/US compliance and ESG reporting requirements.
- Support the institutionalisation of after-action review practice across the regional logistics network — it is currently the dominant gap between the corridor's top performers and its average.

Annex

A.1 Methodology

HOW THE EVIDENCE WAS GATHERED AND ANALYSED

The project relied primarily on in-depth, semi-structured face-to-face interviews conducted with senior managers and decision-makers operating across different layers of the regional logistics ecosystem. In total, twelve interviews were conducted with representatives from shipping lines, freight forwarding companies, container terminals, manufacturing firms, government authorities, logistics service providers, and SMEs. The interviewed organisations represented a broad range of sectors, including maritime transportation, port operations, chemicals, textiles, food and seafood processing, home and personal-care manufacturing, and regional investment and trade development. Interviewees included CEOs, regional managers, operational managers, logistics managers, planning managers, and investment managers with direct involvement in disruption response and operational decision-making.

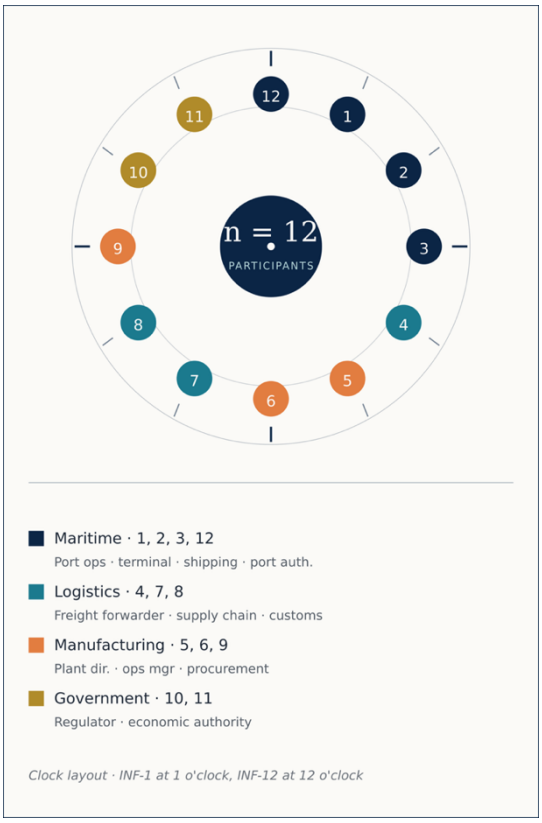
This multi-echelon engagement approach enabled the project to capture a holistic view of how disruption impacts and resilience responses evolved across interconnected supply-chain and logistics actors. Rather than focusing on a single organisation or industry segment, the project examined how operational decisions, risk-management practices, and response strategies were coordinated across the wider logistics network operating within the Suez Canal region.

The semi-structured interview format provided consistency across discussions while also allowing flexibility to explore sector-specific experiences, operational challenges, and emerging resilience practices in greater depth. All interviews were conducted under confidentiality and anonymity conditions to encourage open discussion around organisational vulnerabilities, strategic responses, and collaboration dynamics. Audio recordings were transcribed using an automatic speech-recognition system and then manually reviewed against the original recordings to correct recognition errors and refine technical terminology. Interviews conducted in Arabic were translated into English following transcription, with careful attention to preserving conceptual meaning, professional terminology, and contextual nuance.

The collected data were analysed using a structured six-step systematic thematic analysis approach (Naeem et al., 2023). This process enabled the project team to identify recurring operational patterns, strategic behaviours, and resilience practices across participating organisations. The analysis began with repeated reading of transcripts to develop familiarity

with the data and to identify salient quotations. Keywords were extracted, transformed into codes, and grouped into higher-order themes. Conceptual interpretation of these themes was then undertaken through iterative comparison with existing dynamic-capability literature, leading to the six overarching resilience themes that inform the Supply Chain Resilience Roadmap proposed in this report.

Throughout the analysis, analytical decisions were documented to maintain a clear audit trail linking quotations, keywords, codes, themes, and higher-level interpretations. This systematic and transparent process enhanced the credibility, dependability, and confirmability of the findings.



About the Authors

Dr. Amr Mahfouz

ResiLog Principal Investigator
Global Operations & Supply Chain Expert, Maynooth University

Dr. Amr Mahfouz is Principal Investigator of the ResiLog project and an expert in Global Operations & Supply Chain Management at Maynooth University. He brings over twenty years' experience leading academic, business, and policy research across institutions including Maynooth University, Technological University Dublin, the Freight & Transport Association of Ireland, and MOBICA Egypt. He has served as a policy and industrial advisor to the Department of Transport and to a broad spectrum of freight, logistics, and supply-chain actors across Ireland. His research group has been commissioned by DG REFORM (European Commission) and other institutions to strengthen organisational resilience against successive disruptions — including Brexit, COVID-19, and the Red Sea Blockage. His particular expertise lies in business resilience, geopolitical disruption, risk management, and decision support, with applications across the manufacturing, logistics & transportation, and business-technology sectors.

He can be contacted at amr.mahfouz@mu.ie

Mohaned Bador

Senior Researcher
Business Technology Specialist, Maynooth University

Mohaned Bador has extensive experience working as an AI engineer and data scientist, delivering advanced machine learning models and analytical solutions with particular expertise in deep learning and large language models (LLMs). Currently a PhD candidate at Technological University Dublin, his doctoral research focuses on the strategic integration of artificial intelligence within SMEs, with a specialised emphasis on supporting and scaling minority-led businesses to bridge the gap between cutting-edge technology and inclusive economic growth. He maintains a keen interest in practical AI implementation and data-driven business strategy.