Crisis Flow

CrisisFlow Research and Evidence Guide

The research behind disruption decisions and the evidence needed to act

Disruption management depends on more than recognizing an external event. A useful decision connects that event to the firm's actual dependencies, estimates the consequences, identifies feasible responses, and preserves what can be learned from the result. CrisisFlow brings these tasks into Detect, Assess, Act, and Learn.

This guide connects research insights to the choices facing executives, finance leaders, supply-chain and operations teams, and those responsible for continuity and risk. Each section explains what the insight means for the company, how it changes a practical decision, and how it informs CrisisFlow. The supporting research and its scope are collected in the appendix.

Five insights that change the decision

Research strand	Management consequence
Firm-specific exposure	Relate the hazard to the company's locations, dependencies, and economic commitments.
Network propagation	Examine how an interruption travels through internal and external value chains.
Decisions under uncertainty	Separate new evidence from salience, assumptions, and time pressure.
Continuity and recovery	Compare feasible responses against service, financial, and recovery objectives.
Organizational learning	Retain decisions and outcomes so experience can improve future preparation.

What a buyer should be able to inspect

The useful output is a decision with a traceable basis. A manager should be able to identify the source and age of material information, the affected business objects, the assumptions behind projected consequences, and the cost and feasibility of proposed actions. The record should also show who authorized the response, what changed, and which outcomes were later observed.

The research provides a basis for the design. Product performance requires evaluation against the buyer's own decisions and operating records. Pages 7 and 8 show what a traceable decision contains, how to read its measures, and what to evaluate in an engagement.

Exposure must be specific to the business

The same political development, flood, or digital outage can have different consequences for two firms in the same industry. The difference may lie in where they operate, which inputs they cannot replace, how revenue is distributed, or what they have promised to customers. A country-level or event-level assessment is therefore a starting point, not the complete business diagnosis.

Research insight

Measured political risk varies substantially between firms, even within the same industry. Research on multinational firms also distinguishes physical presence in a country from economic dependence on its market. These findings support a company-specific exposure review rather than treating a regional risk rating as the business diagnosis. [1, 2]

Consequence for the company

A small facility can constrain a much larger operation if it produces a component that cannot be substituted in time. Conversely, a large sales presence in an affected country may have limited immediate production exposure if the firm has usable alternatives. Finance's view of revenue concentration and operations' view of critical dependencies need to be read together.

Before prioritizing a location, establish its role in production, sourcing, logistics, and customer delivery. Then distinguish what the company owns from what it depends on externally. The practical concern is the work and commitments that become difficult to sustain, not simply the number of sites near the event.

The decision this supports

Consider two sites exposed to the same hazard. One has a qualified alternative with available capacity. The other supplies a unique input to several plants. Their event exposure may be similar, but the second dependency may warrant earlier intervention. The manager should check the alternative's qualification, usable capacity, and lead time before deciding where to spend on mitigation.

Agree the boundary of the review. Include the company entities and external tiers needed for that decision, identify missing links, and assign confirmation of critical dependencies. An unknown relationship should remain unknown until evidence supports it. Absence from a map is not evidence that the relationship does not exist.

How CrisisFlow applies the principle

Detect connects hazard information to the internal and external value chain. Site profiles make roles, dependencies, and gaps visible. Assess relates those connections to operational and financial stakes. Hazard-family, site, and company views help a manager move between the overall risk profile and the specific dependency requiring attention. The first evaluation check is whether those entities and links reconcile with company records.

Disruption travels through connected operations

A facility need not be inside the affected area to suffer an interruption. Production can stop because an upstream component is unavailable, a route closes, or a customer cannot receive output. The practical question is which connections transmit the interruption and where the firm has alternatives.

Research insight

Studies of natural disasters document disruption spreading to direct and indirect suppliers and customers. Difficulty replacing a specific input strengthens that transmission. The broader resilience literature likewise treats vulnerability as a property of the connected supply chain. These findings establish why indirect dependencies matter, without implying that every link or hazard produces the same loss. [3–5]

Consequence for the company

Several apparently separate suppliers may rely on the same upstream source or transport route. Buying from two vendors therefore does not necessarily provide two independent supply paths. A useful map must show what flows between organizations, where alternatives converge, and which connections remain uncertain.

Procurement needs the input and its qualification requirements. Operations needs the production sequence and usable substitute capacity. Finance needs the orders, costs, and margins connected to the interruption. These views explain why a supplier relationship matters and where a disruption could become a continuity problem.

The decision this supports

Before switching suppliers, trace the proposed replacement far enough to test whether it avoids the affected dependency. Confirm that the replacement can supply the required specification within the action window. A nominal alternative that uses the same closed port or has no available capacity does not resolve the immediate interruption.

Prioritize deeper mapping where an unanswered question could change the response. If a critical component has no qualified substitute, the next external tier may matter more than broad coverage of easily replaced inputs. Record the chosen boundary and the unverified relationships so that a partial map is not mistaken for a complete network.

How CrisisFlow applies the principle

The interactive network connects sites with suppliers, logistics, and customer obligations. Selecting a site reveals its role and dependencies so the manager can follow the path to business impact. A scoped evaluation should test known dependency paths, proposed alternatives, and missing-link cases. Verified relationships and analytical assumptions should remain distinguishable.

Managers need judgment under uncertainty

A serious event attracts attention, but attention alone does not establish a firm's exposure or identify the best response. Managers must decide with incomplete information, limited time, and competing interpretations. A useful system helps them examine the evidence and preserve alternatives while respecting their authority.

Research insight

Research on firms near hurricane disaster areas finds temporary changes in cash holdings and expressed concern consistent with heightened risk salience. Work on threat and disaster preparation explains how attention, established routines, and behavioral biases can shape decisions. The implication is to make the decision basis explicit when urgency increases. [6–8]

Consequence for the company

A striking news report can draw attention away from a less visible but more consequential dependency. Functions may also act on different accounts of the same event. An official closure notice, a supplier's estimate, and an inferred production delay provide different kinds of evidence. Combining them without preserving that distinction can turn an uncertain estimate into an apparent fact.

Keep the information available at the decision time. Identify which unknowns could reverse the preferred response and which can remain unresolved without changing the choice. This lets the manager direct verification toward a consequential uncertainty instead of waiting for complete information.

The decision this supports

If the reopening time is uncertain, compare plausible durations and examine when waiting ceases to protect customer commitments. Check whether the alternative can still be secured at that point. The choice may be to act now, seek a specific confirmation, or preserve an option while monitoring the next update. Record the condition that would prompt reconsideration.

A recommendation should explain its material trade-off and why another attractive option cannot be executed within the available time. When finance and operations disagree, they can then examine the same assumption, constraint, or priority rather than debate competing summaries.

How CrisisFlow applies the principle

Assess organizes the financial and operational stakes. Act is the manager's decision companion, comparing feasible responses and supporting revision as conditions unfold. The manager retains approval authority. In a company setting, update frequency follows the agreed sources and operating workflow. Real-time support requires making new information and its decision consequences visible, including the age and limits of the information available.

Continuity requires cost benefit and recovery choices

A response that protects one order can consume capacity needed elsewhere. Additional inventory may preserve service but tie up cash. Expedited transport can reduce delay while increasing cost. The decision must consider the feasible combination of actions and the operational objective the company is trying to protect.

Research insight

Analytical and applied supply-chain research shows why mitigation and contingency choices depend on capacity, flexibility, and disruption duration. Evidence on announced disruptions links them to persistent operating consequences. Research on corporate disaster aid also shows the relevance of locally active firms and their capabilities to societal recovery. Together, these strands motivate examining the response portfolio and the wider conditions needed for recovery. [9–12]

Consequence for the company

The cheapest action can leave priority orders unfilled. The fastest action can exhaust a limited budget or consume scarce capacity. A facility may resume production while transport, local infrastructure, or a critical supplier still constrains delivery. Business continuity and full recovery therefore require distinct objectives and milestones.

Agree what must be sustained, what can be deferred, and what resources are available. Maintaining priority deliveries, restoring normal output, and clearing the backlog are different outcomes. Each needs a defined clock and evidence that the milestone has been reached.

The decision this supports

Compare feasible combinations of actions against the same baseline and time horizon. Include the response cost as well as the consequences it may avoid. Check whether an option merely moves a delay or shortage to another site or customer. Finance can assess the economic trade-off while operations tests whether capacity and timing make the response executable.

As conditions change, separate confirmed spending and committed actions from choices still available. An extended closure may justify a different allocation of the remaining budget without making the earlier decision unreasonable. Preserve the original information and rationale, then evaluate the next decision using the resources that remain.

How CrisisFlow applies the principle

Act brings cost, service, timing, capacity, and recovery consequences into the response comparison. The public case separates service and backlog milestones and shows a changing situation. An engagement should test its response choices against the company's actual alternatives and constraints. Cost avoidance needs a stated comparison, and a favorable modeled result remains a forecast until execution and outcomes supply evidence.

Experience can strengthen organizational resilience

Learning requires more than storing an incident report. The company needs to know what it expected, why it chose a response, what was implemented, and what actually happened. That record helps distinguish a useful lesson from hindsight and makes the lesson available beyond the people who handled the event.

Research insight

Research on rare events explains why a shared account of an experience is not necessarily an accurate lesson. An industry study of orbital launches finds different learning effects from success and failure, with failure-related knowledge persisting longer in that setting. These works make the interpretation and retention of experience central to learning, rather than treating any completed review as an improvement. [13, 14]

Consequence for the company

A favorable result can occur because the response worked, because the event was less severe than expected, or because another organization intervened. An unfavorable result can reflect a poor decision, failed execution, or an unforeseeable change. Comparing the result with the original forecast alone cannot settle which explanation is correct.

The review should retain what was known at the time and distinguish a mistaken assumption from a later change. Separate a planned action from one actually completed. Otherwise, hindsight can produce the wrong operational change, such as adding inventory to solve a delay caused by an approval bottleneck.

The decision this supports

Select a consequential difference between the expected and observed outcome. Trace it to the underlying assumption, dependency, approval, or execution step. If evidence shows that a substitute was available but could not be approved in time, the preparation change may be to qualify that substitute in advance. If the evidence instead shows insufficient capacity, the company needs a different response.

Give the proposed change an owner and a future test. Record what evidence supports it and what competing explanations remain. The next exercise or disruption should check whether the change improved the relevant decision or operating result. This makes learning a change in preparation, rather than a growing list of lessons.

How CrisisFlow applies the principle

Learn connects the decision history to outcome review and future preparation. Useful changes may include revising a supplier lead time, identifying an unrecorded dependency, qualifying another route, or clarifying approval authority. The practical evaluation is whether the record supports a justified change and whether that change enters the next plan. The public example illustrates this reasoning with scenario results.

An evidence trail from an alert to a decision

Consider an illustrative manufacturer facing a port interruption. The example below shows how each part of the evidence trail changes the decision. It complements the numerical interactive case by focusing on what the manager needs to inspect and confirm.

Record element	Example and decision consequence
Sourced event	A port authority reports a closure. Retain the notice, publication time, affected facilities, and any stated reopening conditions.
Business connection	The logistics record links inbound components to the affected terminal. Confirm the shipment, planned arrival, and plant that depends on it.
Operating evidence	Inventory and order records show available stock and customer due dates. Confirm their update time before treating them as current.
Assumption	Reopening timing remains uncertain. Compare plausible durations and identify when the preferred response changes.
Modeled consequence	Project service, cost, and backlog outcomes for each feasible response. State the comparison period and preserve the assumptions.
Manager decision	Select a response, record why it is preferable, and identify the approvals, action owners, and deadlines needed to execute it.
New evidence	A later notice extends the closure. Review the remaining choices without erasing prior commitments or the earlier decision basis.
Recorded outcome	Shipment arrivals and customer deliveries confirm what happened. Compare with the forecast and assign any preparation change.

Handling conflicting or incomplete evidence

If a supplier report conflicts with a carrier update, preserve the conflict and its consequences for the decision. Seek confirmation from the responsible party. A scenario can show the effect of either interpretation while the fact remains unresolved. Presenting one convenient value as verified would create false precision.

Authority follows the company's operating rules

An executive may authorize an exception while procurement secures supply and operations changes the schedule. The record should identify those responsibilities. A notification in an existing work system is a handoff, not proof that an action was approved or completed. Confirmations must come from the agreed operational process.

Interpretation and evaluation of the evidence

Read the measures in their intended sense

Measure	Meaning and limit
Risk index	A summary of a risk profile for the stated hazard family, site, or company. It is not an event probability, credit rating, or financial loss amount.
Revenue exposure	Sales connected to an affected operation or flow. A delayed sale is not automatically a permanent loss or a reduction of profit by the same amount.
Economic impact	A scenario estimate with specified cost and loss categories. Identify the time horizon, baseline, response cost, and any excluded consequences.
Recovery milestone	A defined operational state, such as restored capacity or cleared orders. Different milestones can occur on different dates.
Forecast and outcome	A projection based on available evidence differs from an observed result. A simulation comparison is not proof that the response caused a benefit.

Research basis and product evaluation

The cited research informs CrisisFlow's design. The public experience illustrates exposure, impact, response, updated conditions, and learning with scripted developments and modeled outcomes. Software checks verify specified behavior. Evidence of forecast accuracy or customer benefit requires a separate evaluation in the relevant operating setting. No independent customer outcome study or verified CrisisFlow return on investment is presented in this guide.

Agree the evaluation before the engagement

Choose a real decision and a comparison process the company already uses. Agree the network scope, data coverage, update frequency, and approval responsibilities. Test entity and dependency accuracy, reconciliation with operating records, feasibility of proposed actions, and sensitivity to important unknowns. Measure time to a usable decision separately from execution time and realized results.

Retain an agreed baseline and compare alternatives using the same constraints. Review forecast error when outcomes become available. Record overrides, missed information, and the work needed to use the output. Permission, retention, licensing, and access arrangements should be settled for the actual data and systems involved.

Selected research references

Fourteen works from 1981 to 2022 support these insights. Empirical studies, analytical models, and conceptual work answer different questions. Their scope is summarized below. Inclusion is not an endorsement of CrisisFlow by an author, publisher, university, or company.

Luis Ballesteros, CrisisFlow's founder, is a coauthor of references 2 and 12. These are part of the wider scholarship presented here. Founder-authored research is not independent product validation.

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