Constructing the Meaning of Supply Chain Resilience in an Era of Global Uncertainty: A Conceptual Review

Chinichi Ranov Tampubolon, Kiki Farida Ferine, Sri Rahayu

Abstract

Global disruptions such as pandemics, geopolitical conflicts, and commodity price volatility have made supply chain resilience a strategic concern. However, the literature has largely treated resilience as a structural capability measured through predetermined elements such as flexibility, redundancy, visibility, and collaboration. As a result, the role of managerial interpretation in shaping resilience remains underexplored. This conceptual article develops a framework that integrates the capability perspective with the sensemaking perspective. An integrative literature review following a model-based approach was used to synthesize research on supply chain resilience, dynamic capability theory, and sensemaking theory. The synthesis yields a conceptual model in which managerial sensemaking links global uncertainty to the mobilization of resilience capabilities. Local context shapes this relationship, while post-disruption learning serves as a feedback loop. The model is expressed in five propositions and accompanied by a research agenda, including the use of grounded theory to test and enrich the model empirically. The article suggests that managers should design resilience strategies that consider how disruptions are interpreted, not only which resources are available.

***Keywords**:* supply chain resilience; global uncertainty; sensemaking; dynamic capabilities; conceptual review

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Introduction

Over the past decade, global supply chains have faced a series of disruptions that have been frequent and difficult to predict, ranging from the COVID-19 pandemic and geopolitical conflicts to trade restrictions and extreme weather. The pandemic showed that a disruption at a single node can spread across an entire network and interrupt the cross-border flow of goods [1]. Large-scale and prolonged disruptions have even prompted researchers to extend the concept of resilience toward the viability of supply networks [2].

Supply chain resilience is generally understood as the ability of a supply chain to prepare for disruptions, respond to them, and recover to its original state or to an improved one [3], [4]. Systematic reviews show that research in this field has grown rapidly. Most studies, however, view resilience as a structural capability built through elements such as flexibility, redundancy, visibility, and collaboration [5], [6], [7].

This view explains which resources are needed, but it does not fully explain why firms with similar resources respond to disruptions differently. Such differences may stem from how managers interpret situations, assess threats, and define what it means to be "resilient." Sensemaking theory holds that organizational action in ambiguous situations depends on interpretations constructed by the actors involved [8], [9]. Yet this perspective has rarely been linked explicitly to the supply chain resilience literature.

This gap forms the basis of the article's contribution. The article proposes a conceptual framework that integrates the capability and sensemaking perspectives to explain how supply chain resilience is constructed. The Indonesian context is incorporated as a condition that may shape both the meaning and the practice of resilience.

Accordingly, this article addresses three questions: (1) how the literature understands supply chain resilience from the capability perspective and from the meaning-making perspective; (2) how these two perspectives can be integrated into a single framework; and (3) which propositions and research agenda can be derived from that framework.

Literature Review

2.1 The Evolution of the Supply Chain Resilience Concept

Early studies viewed resilience as the ability of a system to return to its original state after being disrupted [3]. Sheffi and Rice emphasized that resilience can be built through redundancy and flexibility, with flexibility being more valuable in the long term [10]. Ponomarov and Holcomb described resilience in three phases: readiness, response, and recovery [4]. Pettit et al. viewed resilience as a balance between a firm's level of vulnerability and its capabilities [11].

Later studies broadened this view. Systematic reviews found that definitions of resilience vary considerably and that resilience strategies are commonly divided into proactive strategies, which prepare the supply chain before a disruption, and reactive strategies, which address the disruption once it occurs [5], [6]. Ali et al. further mapped resilience concepts across the periods before, during, and after a disruption [7]. More recently, the notion of viability has been proposed to capture a supply chain's ability to survive prolonged and large-scale disruptions, not merely to recover from short-term shocks [2]. Taken together, these developments show that the concept has shifted from a "bounce back" view toward a more adaptive and forward-looking understanding of resilience.

2.2 Resilience as a Dynamic Capability

Dynamic capability theory explains a firm's ability to integrate, build, and reconfigure resources in rapidly changing environments [12]. Several scholars have used this theory to frame supply chain resilience as a capability with both proactive and reactive dimensions [13]. At the inter-organizational level, collaboration with suppliers and customers plays a role in building resilience [14], while visibility supported by information sharing is associated with both resilience and robustness [15].

Chowdhury and Quaddus, for example, conceptualized supply chain resilience as a combination of proactive capability, reactive capability, and the quality of supply chain design [13]. Brandon-Jones et al. adopted a contingent resource-based view and argued that the benefits of visibility depend on the complexity of the supply base [15]. These studies suggest that resilience capabilities are necessary but not sufficient. Whether and how they are deployed depends on organizational conditions and, as argued in this article, on how managers interpret the situation they face.

2.3 Sensemaking in Crisis Situations

Sensemaking is the process through which individuals interpret ambiguous or unexpected events and then act on those interpretations [8]. The process is triggered by situations that violate expectations, involves selecting cues from the environment, and produces actions that in turn shape the environment itself [9]. In sensemaking, plausible interpretations often guide action more than fully accurate ones [8]. This feature is highly relevant to supply chain managers, who must make rapid decisions with limited information when a disruption occurs.

Sensemaking is also a social process. It often takes place through conversations and shared stories, and leaders may engage in sensegiving, that is, attempts to shape how others interpret events [9]. Because supply chains span several organizations, sensemaking during a disruption is rarely confined to a single firm. Managers interpret signals from suppliers, customers, and logistics providers, and their interpretations are in turn shaped by these partners. This inter-organizational character makes sensemaking a promising lens for explaining why resilience outcomes differ across supply chains.

Research Methodology

3.1 Conceptual Article Design

This is a conceptual article that does not rely on primary data. Its design follows the model approach described by Jaakkola, which develops a theoretical framework explaining relationships among concepts and expresses them as propositions [16]. The supply chain resilience literature serves as the domain theory, while dynamic capability theory and sensemaking theory are used as lenses to explain the phenomenon.

A conceptual design is appropriate for two reasons. First, the supply chain resilience literature already contains a large number of empirical studies, but their findings remain fragmented across different theoretical traditions [5], [6]. Second, the link between managerial interpretation and resilience has received little theoretical attention, so a framework is needed before the link can be tested empirically. According to Jaakkola, a conceptual article does not require empirical data, but it must justify the choice of theories and explain clearly how they are integrated [16]. This article meets these requirements by stating the domain theory, the theoretical lenses, and the logic used to combine them.

3.2 Integrative Literature Review

The synthesis was conducted through an integrative literature review, which reviews, critiques, and combines representative literature to generate new frameworks or perspectives [17], [18]. Sources were selected purposively according to three criteria: (1) they are seminal works or systematic reviews in the field of supply chain resilience; (2) they address dynamic capability theory or sensemaking in relation to decision-making under uncertainty; and (3) they were published in reputable journals or as established reference books. The main sources are summarized in Table 1.

The review proceeded in three steps. First, each source was read in full to identify its definition of resilience, the elements or mechanisms it proposed, and the outcomes it examined. Second, these concepts were compared across sources to identify points of agreement, differences, and gaps. Third, the concepts were organized into themes that formed the building blocks of the framework. Torraco notes that an integrative review can produce a new conceptual framework when existing knowledge is synthesized in a novel way [17]. Because the sources

were selected purposively, this review does not claim to cover the entire literature; instead, it focuses on the works most relevant to the research questions.

Table 1. Main Literature Synthesized

No.	Source	Focus	Contribution to the framework
1	Christopher & Peck [3]; Ponomarov & Holcomb [4]	Definition and phases of resilience	Readiness, response, and recovery as resilience outcomes
2	Sheffi & Rice [10]; Pettit et al. [11]	Elements of resilience	Flexibility, redundancy, and the balance between vulnerability and capability
3	Tukamuhabwa et al. [5]; Hohenstein et al. [6]; Ali et al. [7]	Systematic reviews	Mapping of resilience elements and research gaps
4	Teece et al. [12]; Chowdhury & Quaddus [13]	Dynamic capabilities	Resilience as a proactive and reactive capability
5	Scholten & Schilder [14]; Brandon-Jones et al. [15]	Collaboration and visibility	Inter-organizational mechanisms for building resilience
6	Weick [8]; Maitlis & Christianson [9]	Sensemaking	Managerial interpretation as a basis for action

3.3 Framework Development Stages

The framework was developed in five stages, as shown in Figure 1: identifying the conceptual gap, selecting the base theories, synthesizing the literature integratively, formulating the conceptual model and propositions, and developing a research agenda.

In the first stage, the gap was identified by comparing the dominant capability perspective with the limited attention given to managerial interpretation. In the second stage, dynamic capability theory and sensemaking theory were selected because each explains a different part of the phenomenon: the former explains which capabilities matter, while the latter explains how managers decide to use them. The third stage synthesized the literature into the themes presented in the Results section. The fourth stage translated the themes into a conceptual model and five propositions, and the fifth stage derived a research agenda for testing the model.

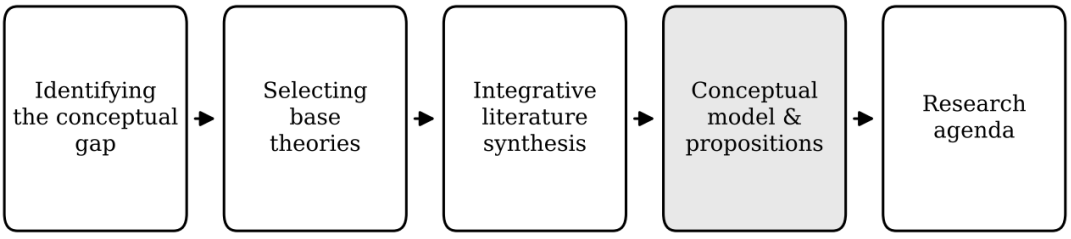


Figure 1. Stages of Conceptual Framework Development

Results and Discussion

4.1 Resilience as a Structural Capability

The synthesis shows that the capability perspective explains resilience through a relatively consistent set of elements. These elements and their roles are summarized in Table 2.

Table 2. Capability Elements of Supply Chain Resilience

No.	Element	Role in resilience	References
1	Flexibility	Adjusting supply sources, production, and distribution as conditions change	[10], [19]

No.	Element	Role in resilience	References
2	Redundancy	Providing reserve capacity or inventory to absorb shocks	[10], [3]
3	Visibility	Providing a timely picture of supply chain conditions	[19], [15]
4	Collaboration	Enabling information sharing and joint decision-making with partners	[19], [14]
5	Velocity and agility	Accelerating response and recovery after disruptions	[3], [19]

Empirical evidence from the global financial crisis indicates that flexibility, velocity, visibility, and collaboration are associated with a supply chain's ability to cope with disruptions [19]. However, this perspective tends to assume that available capabilities will be used appropriately when a disruption occurs. Such an assumption overlooks the interpretive process that precedes the decision to deploy those capabilities.

These elements can also be linked to the three phases of resilience [4]. Redundancy and visibility are particularly important in the readiness phase, as they help firms prepare buffers and detect early warning signals. Flexibility and collaboration play a central role in the response phase, when firms must adjust operations and coordinate with partners. Velocity and agility are crucial in the recovery phase, when the goal is to restore normal operations quickly. However, these elements involve trade-offs; for example, redundancy increases resilience but also raises inventory and capacity costs [10]. Choosing among them therefore requires managerial judgment, which further highlights the role of interpretation.

4.2 Resilience as a Constructed Meaning

The sensemaking perspective helps fill this gap. When a disruption occurs, managers must decide whether the event represents a serious threat, a temporary problem, or an opportunity [9]. This decision is based on cues selected from the environment and on prior experience. Consequently, two firms with similar capabilities may display different levels of resilience if their managers interpret the disruption differently.

From this standpoint, resilience is not only possessed but also constructed. For one manager, resilience may mean keeping supplies flowing; for another, it may mean maintaining relationships with key suppliers or simply surviving until conditions improve. These different meanings are likely to lead to different choices of capabilities. The resulting actions then create a new situation that is interpreted once again [8].

Drawing on the sensemaking literature [8], [9], this process can be described in three moments. The first is noticing, when managers select certain signals, such as delayed shipments or price spikes, as meaningful cues. The second is interpreting, when they frame the disruption as a threat, a temporary problem, or an opportunity. The third is enacting, when they take actions that reflect this framing and, in doing so, change the situation itself. Each moment opens the possibility for differences across firms, which helps explain why similar capabilities can lead to different resilience outcomes.

4.3 Conceptual Model and Propositions

By integrating both perspectives, this article proposes the conceptual model shown in Figure 2. Global uncertainty acts as a trigger that is interpreted through managerial sensemaking. This interpretation guides the mobilization of capabilities, which in turn determines supply chain resilience in the readiness, response, and recovery phases [4]. Local context influences the relationship between interpretation and capability mobilization, while experience in dealing with disruptions feeds back into the meaning of resilience.

The model is intended for situations in which a disruption is significant enough to require managerial decisions beyond routine operations. It does not aim to explain everyday variations in demand or supply, which are usually handled by standard procedures. The model also treats

the firm as the main unit of analysis while recognizing that sensemaking involves interactions with supply chain partners.

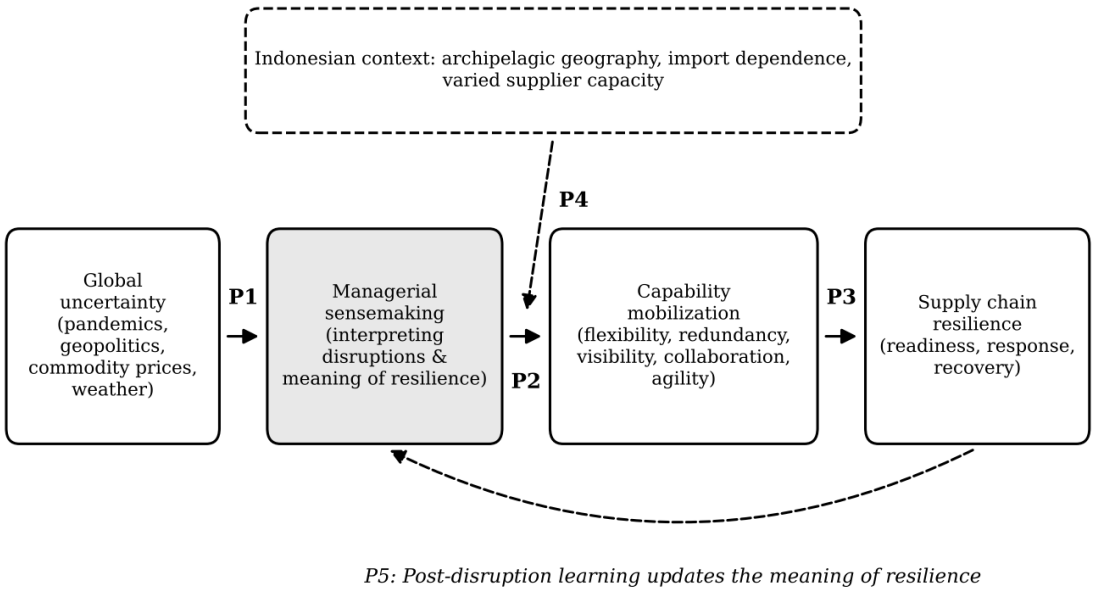


Figure 2. Conceptual Model of the Constructed Meaning of Supply Chain Resilience

The model is expressed in the following five propositions.

P1: *Global uncertainty that is more ambiguous and prolonged increases the intensity of managerial sensemaking in interpreting supply chain disruptions [9], [2].*

P2: *The meaning of resilience constructed by managers influences the type of capabilities mobilized, such as an emphasis on redundancy, flexibility, or collaboration [8], [13].*

P3: *Mobilizing capabilities that match the nature of a disruption enhances supply chain resilience in the readiness, response, and recovery phases [4], [19].*

P4: *Local context, such as archipelagic geography, dependence on imported supplies, and varied supplier capacity, shapes the relationship between the meaning of resilience and the capabilities mobilized [15].*

P5: *Learning from experience with disruptions updates the meaning of resilience that managers apply to subsequent disruptions [7], [12].*

P1 and P2 capture the interpretive core of the model, which is the main contribution of this article. P3 connects the model to established findings on the outcomes of resilience capabilities. P4 recognizes that the same interpretation may lead to different capability choices depending on local constraints, such as limited supplier alternatives or long transport distances between islands. P5 adds a dynamic element by suggesting that the meaning of resilience is not fixed but evolves as firms learn from each disruption.

4.4 Discussion

This model extends the view of resilience as a balance between vulnerability and capability [11]. Such a balance does not emerge automatically; rather, it is formed through managers' interpretations of the vulnerabilities they face and the capabilities they consider relevant. Sensemaking can therefore be seen as a micro-level mechanism that connects organizational capabilities with resilience outcomes.

The model is also consistent with the dynamic capability view [12], [13]. The ability to reconfigure resources requires the ability to recognize when and why reconfiguration is needed, and this recognition is rooted in sensemaking. The inclusion of local context further suggests that resilience elements developed in advanced economies may not be interpreted or applied in the same way in Indonesia.

Overall, this article makes three contributions. First, it introduces managerial interpretation as a missing link between resilience capabilities and resilience outcomes. Second, it connects two theoretical traditions, dynamic capabilities and sensemaking, that have mostly developed separately in the supply chain field. Third, it highlights the role of local context, which encourages researchers in emerging economies to examine resilience on its own terms rather than simply applying frameworks developed elsewhere.

4.5 Research Agenda

The propositions above need to be tested and enriched empirically. Table 3 outlines a possible research agenda.

Table 3. Agenda for Future Research

No.	Research question	Suggested design
1	How do supply chain managers in Indonesia make sense of resilience?	Constructivist grounded theory using in-depth interviews [20]
2	How does the meaning of resilience guide capability choices during disruptions?	Multiple case study of firms with different disruption experiences
3	How strong are the relationships among the constructs in the model?	Survey and PLS-SEM after developing a sensemaking scale
4	How does the meaning of resilience change after repeated disruptions?	Longitudinal study

Each design offers a different contribution. Grounded theory is well suited to exploring how managers construct the meaning of resilience, because it allows categories to emerge directly from their experiences [20]. Multiple case studies can then compare how different meanings lead to different capability choices. Once the key constructs are better understood, quantitative studies can develop measurement scales and test the propositions on larger samples. Longitudinal designs are particularly valuable for testing P5, since learning and changes in meaning can only be observed over time.

Conclusion

This conceptual article shows that the supply chain resilience literature is dominated by a capability perspective that emphasizes flexibility, redundancy, visibility, collaboration, and velocity. This perspective can be enriched by sensemaking theory, which explains that the use of capabilities is preceded by managers' interpretations of disruptions. The two perspectives are integrated into a conceptual model in which managerial sensemaking links global uncertainty to capability mobilization, with local context as an influencing condition and learning as a feedback loop. The model is expressed in five propositions and a four-item research agenda.

In practical terms, managers should pay attention not only to the capabilities their firms possess but also to how their teams interpret disruptions, for example through cross-functional review forums, disruption scenario exercises, and post-crisis documentation of lessons learned. This article has limitations, as the model has not yet been tested empirically and the literature was selected purposively rather than through a systematic review. Future studies are encouraged to test the propositions using grounded theory, case studies, or quantitative surveys.

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