



**NIST Technical Note
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Institutional Resilience and Recovery: An Annotated Bibliography of Conceptual and Methodological Approaches for Measurement

Kelly Anderson
Maria Dillard

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Kelly Anderson

*Materials and Structural Systems Division
Engineering Laboratory*

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Author ORCID iDs

Kelly Anderson: 0000-0003-1355-1576

Maria Dillard: 0000-0003-1772-8914

Contact Information

kelly.anderson@nist.gov

Abstract

This annotated bibliography synthesizes findings from 47 empirical studies on institutional resilience and recovery across diverse disciplines, hazards, and organizational contexts. Institutions such as governance, education, and healthcare depend on organizations and the built environment to deliver critical social functions; however, disasters like Hurricane Katrina reveal how institutional breakdowns can amplify risk. Despite growing attention, organizational resilience research remains fragmented, with varied definitions, limited consensus on core components, and a disproportionate focus on private-sector organizations. To address these gaps, 47 studies published between 1980 and 2026 were systematically identified, screened, and annotated using a structured framework capturing definitions, methods, theoretical engagement, sector, disruption type, and findings. Results indicate heavy reliance on survey data, limited attention to long-term recovery trajectories, and consistent evidence that investment in human resources strengthens resilience. By providing a transparent, reproducible review, this bibliography highlights areas of convergence, divergence, and opportunity, supporting the development of standardized measures and practical assessment tools.

Keywords

Assessment methodologies; indicators; institutional resilience; institutions; metrics; organizational recovery; organizational resilience; organizations; recovery measurement; resilience measurement.

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1. Introduction and Objectives

Institutions are the social structures that shape how we behave and interact with one another [1]. Throughout history, human survival has depended on social institutions to organize the way we share resources, care for one another, and pass on knowledge to the next generation. From family networks to complex systems of governance, education, and healthcare, institutions have evolved to meet the needs of growing and increasingly complex societies. As societies have become more interconnected, institutions have grown more interdependent. This interdependence can enhance resilience and amplify risks, as institutions evolve in ways that can stabilize or destabilize society. Hurricane Katrina's catastrophic impacts in New Orleans illustrate how institutional dynamics can exacerbate disaster outcomes. Multiple breakdowns, including delayed evacuation orders by local and state leadership and a lack of preparedness among healthcare organizations, resulted in stranded populations and preventable deaths in hospitals and nursing homes that were exposed to flooding [2, 3, 4]. Institutions and the functions they serve for society are only as resilient as the organizations and the supporting social and physical systems through which they are implemented. Institutional resilience depends on both organizations and the built environment that supports their activities. While interconnected, these represent distinct but complementary aspects of institutional resilience.

Because organizations provide the functional foundation of social institutions, their individual operational capacities at the aggregate level support community resilience. This review focuses on the organizational dimension of institutional resilience, recognizing that organizational capacities and processes, alongside the condition and functionality of the built environment, influence the continuity and recovery of essential services following disasters. When organizations fail or recover slowly, the loss or disruption of essential services diminishes community-level adaptive capacity and overall recovery.

Organizations such as courts, churches, schools, and hospitals are both institutional structures and physically anchored, place-based sites through which institutions are enacted. They structure daily activities and provide access to critical resources and mechanisms of public coordination [5, 6]. As disasters and systemic shocks have exposed organizational vulnerabilities, interest has grown in integrating resilience into planning processes and in developing ways to quantify resilience at the organizational level. This has led to the emergence of organizational resilience measurement frameworks as an imperative for both research and practice [7, 8, 9].

Significant gaps remain in the organizational resilience literature. First, as a widely studied topic across multiple disciplines, resilience has been defined and applied in diverging ways, reinforcing its reputation as a fuzzy, context-specific concept shaped by disciplinary orientation and tradition [10, 11]. Second, organizational resilience remains an emerging field marked by construct proliferation and limited consensus on boundaries, dimensions, and core components [11, 12]. Finally, the empirical base is disproportionately concentrated in the private, for-profit sector, with much of the conceptual and measurement work developed through studies of strategic management, business continuity, and supply chains [9, 10, 13]. By contrast, public

and non-profit organizations remain underexamined, despite their central roles in enhancing resilience and facilitating disaster recovery.

To address these gaps, this annotated bibliography summarizes key aspects of 47 empirical studies on organizational resilience and recovery. Papers were selected through a systematic review of peer-reviewed literature guided by explicit inclusion criteria. The review targeted quantitative empirical research, aiming for a sample spanning multiple disciplines and representing diverse organizational contexts beyond traditional for-profit firms, such as public and non-profit organizations. Geographically, the reviewed literature spans North America, Europe, Asia, and Africa. It captures elements such as study goals, methodologies, and findings, as well as the definitions and operationalizations of resilience and recovery used in each study. While the unit of the analysis is the organization, data collection relied on individual representatives, such as executive leaders, managers, and business owners. The bibliography provides a comprehensive summary of the diverse measurement approaches used, drawing on various disciplinary orientations and organizational contexts, and highlighting the complex, multifaceted ways in which resilience and recovery are conceptualized and measured.

The objectives of conducting this review and providing this annotated bibliography are as follows:

- Identify and conduct a comprehensive review of existing empirical studies on organizational resilience and recovery, summarizing their methodologies, findings, and measurement approaches.
- Create a reference resource for researchers and practitioners seeking to quantify resilience and recovery across diverse hazard types and different organizational contexts. This resource synthesizes the diverse measurement approaches used in organizational resilience and recovery research, facilitating the identification of commonalities, best practices, and areas for further research.
- Inform and support the development of practical tools and methodologies for measuring organizational resilience and recovery, including the creation of standardized assessment methodologies, literature reviews, and a repository of survey questions to improve comparable pre- and post-event data collection.

2. Article Selection and Analysis Methods

The following annotated bibliography is based on a systematic, reproducible literature search designed to identify empirical studies on organizational resilience and recovery following disaster events.

A systematic search was executed within the Web of Science (WoS) Core Collection. The WoS Core Collection was chosen because organizational resilience is an emerging field spanning business, management, sociology, and disaster studies. The WoS Core Collection covers these diverse disciplines while applying standardized journal selection criteria, ensuring the inclusion of relevant, peer-reviewed, and highly reputable literature with consistent indexing data.

The search was executed using two targeted search strings designed to isolate organizational contexts while filtering out unrelated fields (e.g., chemistry, agriculture):

- 1 [organi* AND resilien* NOT organic]
- 2 [organi* AND recov* NOT organic]

The initial search yielded 79,230 peer-reviewed records, which were then supplemented with a targeted review of leading organizational science journals following Mayo et al. [14]. Restricting the disciplinary scope to management, sociology, organizational science, and interdisciplinary social sciences fields refined the selection to 1,550 records.

The remaining 1,550 records were screened against eligibility criteria to identify relevant, high-quality studies. To be included, articles had to be peer-reviewed, English-language empirical studies (quantitative or mixed-methods) published between 1980 and 2026, focusing on public, private for-profit, or non-profit organizations facing natural or human-generated disruptions.¹ Theoretical papers, literature reviews, unvalidated modeling studies, and non-peer-reviewed document types (e.g., book reviews, notes) were excluded.

Because titles and abstracts often lack finer detail, we evaluated the methodology, context, and operationalized variables of interest within these records to verify empirical alignment. This step was necessary to ensure that candidate studies, for example, employed quantitative rather than purely qualitative data, and to confirm that the variables related to organizational resilience rather than adjacent fields like supply chain resilience. This screening process resulted in the selection of 47 studies for analysis in this bibliography. Data extraction was completed using spreadsheets and Atlas.ti software.

In this review, each study was annotated using a standard format that summarizes:

Goals & Scope: Summary of the study's goal(s) and scope.

Ownership Structure/Sector: The ownership structure and sector of the organization under study. Code categories for ownership structure include *public*, *private for-profit*, *private non-profit*.

¹ Note that the following exceptional cases were excluded: negative publicity events, ethical violations, information security threats, and case studies in warzone settings. These exclusions represent a small number of unique events that do not undermine the overall comprehensiveness of this annotated bibliography.

Treatment of Built Environment: Studies were coded based on the extent to which they considered the built environment or physical assets and facilities. The code categories are *none; implied; explicit; comprehensive* (multiple aspects of the built environment are considered, for example, utilities, structure, access, neighboring facilities, etc.).

Theory Engagement: Studies were categorized based on their level and type of engagement with theoretical frameworks or models [15]. The code categories used and their description:

- *Developing:* Proposing a new framework or conceptual model based on empirical synthesis and theory-building.
- *Extending:* Modifying, adapting, or partially building on an existing theory; adds new dimensions or refines boundaries.
- *Testing:* Directly applying or evaluating a pre-existing theory/framework in a new context.
- *Summarizing:* Synthesizing prior work empirically but without clear theory building.
- *None:* Purely descriptive/empirical, no theoretical claims.

Definition of Resilience/Recovery: The definition of resilience and/or recovery used in each study.

Disruption Type: The type of disruption was coded based on the underlying hazard type or primary cause of the disruption. The code categories are: Natural hazard, pandemic, technological hazard, economic shock, chronic stressor², security hazard, other, not specified.

Methodology: A summary of the research methods used in each study, including details on the temporal design, data sources, sample size, and analytical approaches.

Recovery/Resilience Measurement: Description of how each study measured or operationalized resilience and/or recovery, including the specific metrics, indicators, or survey items used. In cases where the study provided explicit details on the measurement tools or methods, the metric or survey item is reported.

Independent Variable(s): Summary description of independent variable(s) used in each study.

Findings: Summary of the study's reported outcomes and main findings.

The following section provides annotations of the 47 selected empirical studies, followed by a brief discussion of findings and contributions of this annotated bibliography.

² The term *chronic stressor* refers to long-term environmental or social pressures (e.g., poverty, structural disinvestment, repeat flooding) that persistently disrupt societal systems.

3. List of Annotated Studies

- 1) Akpan EE, Johnny E, Sylva W (2021) Dynamic capabilities and organizational resilience of manufacturing firms in Nigeria. *Vision: The Journal of Business Perspective* 26(1):48–6.. 9
- 2) Andrew S, Arlikatti S, Siebeneck L, Pongponrat K, Jaikampan K (2016) Sources of organisational resiliency during the Thailand floods of 2011: A test of the bonding and bridging hypotheses. *Disasters* 40(1):65–84 10
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4. Annotated Bibliography of Organizational Resilience Studies

The following annotated bibliography provides a structured synthesis of each study meeting the inclusion criteria. Using a standardized framework, each entry is analyzed across ten key dimensions, such as research scope, theoretical engagement, service disruption type, measurement metrics, and main findings, which are used to identify empirical trends, theoretical alignments, and gaps in the current literature.

- 1) Akpan EE, Johnny E, Sylva W (2021) Dynamic capabilities and organizational resilience of manufacturing firms in Nigeria. *Vision: The Journal of Business Perspective* 26(1):48–64.

Goals & Scope: The study aims to examine how dynamic capabilities influence organizational resilience. Specifically, it tests whether two dimensions of dynamic capabilities (sensing capability and reconfiguration capability) predict two dimensions of organization resilience (adaptability and agility).

Ownership Structure/Sector: Private for-profit; manufacturing

Treatment of Built Environment: None

Theory Engagement: Testing. The study tests pre-existing theoretical frameworks in a novel context. Specifically, the study explicitly grounds itself in Resource-Based View (RBV) [16] and Dynamic Capabilities Theory [17], applying them to the Nigerian manufacturing sector.

Definition of Resilience/Recovery: The authors reference Annarelli and Nonino (2016) and Annarelli et al.'s (2020) definition of organizational resilience, which is “the firm’s strength to withstand disruptions and unplanned changes based on its strategic awareness and collaboration between internal and external capabilities” (p. 50).

Disruption Type: Not specified

Methodology: This study utilizes a quantitative, explanatory research design.

- Data were collected via a structured survey questionnaire. 62 individuals representing 11 organizations participated.
- Data were analyzed using descriptive statistics and Partial Least Squares Structural Equation Modeling (PLS-SEM).

Recovery/Resilience Measurement: The study operationalizes resilience through two dimensions, adaptability and agility, adopted from Ahsan and Ngo-Ye (2005), Ooserthout et al. (2007), Tallon (2008), Chu (2012), Kantur and Iseri-Say (2015), and Sylva and Ojiabo (2018). All items were rated on a five-point Likert scale (1 = strongly disagree to 5 = strongly agree) (p. 61).

Adaptability was measured using four items:

1. “Our company frequently adopts new marketing techniques as changes occur.”
2. “Our company frequently introduces new products so as to satisfy the customer’s changing needs.”

3. "Our company frequently modifies our products to cope with changes in the environment."
4. "Our company frequently adopts new technologies and skills to be as par [sic] with our competitors."

Agility was measured using eight items:

1. "We rapidly take action as changes occur in the environment."
2. "We develop alternatives in order to benefit from negative circumstances."
3. "Our firm is quick in taking required action when needed."
4. "We quickly react to new products launched by competitors."
5. "Our firm quickly switches suppliers to take advantage of lower costs, better quality or improved delivery items."
6. "Our firm quickly adopts new technologies to deliver better, faster, and cheaper services."
7. "We swiftly adapt to changes due to new regulations."
8. "We quickly respond to customers' needs."

Independent Variable(s): Dynamic capabilities were operationalized into two dimensions (sensing capability and reconfiguration capability) adapted from MacInerney-May (2012). Sensing capability was measured using eight items and reconfiguration capability, seven statement items.

Findings: The study found that sensing and reconfiguration capabilities significantly enhance organizational resilience, with both positively influencing organizations' adaptability and agility. Results confirm that organizations with stronger dynamic capabilities are better able to adjust strategies, redeploy resources, and respond quickly to disruptions. These findings provide empirical support for the RBV and Dynamic Capabilities Theory in explaining organizational resilience.

- 2) Andrew S, Arlikatti S, Siebeneck L, Pongponrat K, Jaikampan K (2016) Sources of organisational resiliency during the Thailand floods of 2011: A test of the bonding and bridging hypotheses. *Disasters* 40(1):65–84.

Goals & Scope: The study aims to identify sources of organizational resilience during the 2011 Thailand floods by empirically testing two competing rationales: 1) the bonding hypothesis, and 2) the bridging hypothesis. The authors contrast two paths to organizational resilience: bonding social capital, built by "work[ing] closely with others" during disaster recovery transitions, and bridging social capital, achieved by positioning the organization as a "central actor" to access diverse, novel resources (p. 67). The objective is to assess how social network structures shape organizational resilience during disasters.

Ownership Structure/Sector: Public and private non-profits; multi-sector (e.g., community- and faith-based organizations, industry, education, tourism, healthcare, emergency management, and military)

Treatment of Built Environment: None

Theory Engagement: Testing. The study tests a pre-existing theoretical framework in a novel context. Specifically, the study is based on the Institutional Collective Action framework (Andrew 2009, Andrew and Carr 2013) and social capital theories, applied to a newly industrialized country (i.e., Thailand).

Definition of Resilience/Recovery: The study does not define organizational resilience. However, resilience is conceptualized as the capacity of organizations to adapt, continue operations, and recover effectively during and after disasters. There is a particular emphasis on how resilience is shaped by their network positions (bonding vs. bridging ties).

Disruption Type: Natural hazard (Flooding)

Methodology: This quantitative study follows an explanatory research design.

- Flooding occurred in October 2011, and the interviews/surveys were carried out May 2012, approximately 6-7 months post event, corresponding to early- to mid-recovery phases of disaster management.
- Data were collected via semi-structured interviews of 44 organizations. Semi-structured interviews included a structured survey component.
- Data were analyzed using a network analysis to obtain closeness and betweenness centrality scores for each organization. This was followed by an Ordinary Least Squares (OLS) analysis to test whether these network measures predicted organizational resilience scores.

Recovery/Resilience Measurement: Resilience measurement is based on four survey statement items using a five-point Likert scale (1 = disagree to 5 = completely agree) (p. 76), adapted from Bruneau et al. (2003):

1. “Do you agree that your organization has the ability to carry out routine tasks and, at the same time, help flood victims and their communities cope?” (Robustness).
2. “Do you agree that your organization is resourceful in meeting the needs of the flood victims and their communities?” (Resourcefulness).
3. “On a scale of 1 being “Slow” to 5 being “Very fast”, would you agree that your organization or business was able to overcome operational disruptions immediately caused by the floods?” (Redundancy).
4. “On a scale of 1 being “Slow” to 5 being “Very fast”, how would you rank the rapidity of providing the flood victims with resources that you have?” (Rapidity).

Independent Variable(s): The main independent variables used in this analysis were the closeness and betweenness centrality measures indicating bridging and bonding social network ties.

Findings: Results of the analysis support the bridging hypothesis, demonstrating that organizations with diverse, cross-sectoral connections and central positions in disaster response networks were significantly more resilient during the flooding. The bonding hypothesis, however, was not supported. Close-knit, redundant ties were found to offer little or even

negative contributions to resilience. Resilience was also found to vary by location and sector. Rural organizations and those in the private and non-governmental organization (NGO) sectors were more resilient than government agencies, which struggled with lost trust and weak coordination.

- 3) Barker VL, Mone MA (1998) The mechanistic structure shift and strategic reorientation in declining firms attempting turnarounds. *Human Relations* 51(10):1227–1258.

Goals & Scope: The study provides evidence regarding the extent, antecedents, and effect of mechanistic shifts at declining organizations attempting turnarounds. Specifically, the study seeks to examine how mechanistic organizational structures influence the extent of strategic reorientation in declining organizations attempting turnarounds. The authors test whether firms with highly formalized, centralized, and standardized organizational structures are less able to implement the broad strategic changes theorized as necessary for recovery.

Ownership Structure/Sector: Private for-profit; manufacturing

Treatment of Built Environment: None

Theory Engagement: Extending. The study extends hypotheses grounded in organizational decline and turnaround theory, combining Tushman and Romanelli's (1985) work on convergence and reorientation. The study adopts Barker and Duhaime's (1997) operationalization of recovery (strategic reorientation).

Definition of Resilience/Recovery: The study conceptualizes recovery as the extent of strategic orientation enacted by management during a turnaround attempt.

Disruption Type: Chronic stressor (financial crisis)

Methodology: This quantitative study employs an explanatory research design, testing theory-driven hypotheses on mechanistic structure and strategic orientation using secondary and original data.

- Secondary data to identify declining organizations were sourced from COMPUSTAT and the U.S. Department of Commerce industry census databases, covering a 15-year period (1975-1989). Original data were collected from a final sample size of 29 organizations using a semi-structured questionnaire. The original data were used to assess the extent of mechanistic shift and the extent of strategic reorientation during an organization's attempted turnaround, in addition to leadership tenure and history.
- Data were analyzed using Ordinary Least Squares (OLS) regressions and difference of means t-tests.

Recovery/Resilience Measurement: The study conceptualizes recovery as the extent of strategic orientation, indicated with two independent measures, derived from Barker and Duhaime (1997). The two independent measures are then combined and an average of standardized scores is calculated to arrive at an overall Extent of Strategic Orientation metric:

Change in Strategy is an index calculated from two subindices (p. 1242). Business Level Change Index is the sum or total number of business level management actions taken by a firm during its turnaround attempt (ranging from 0-19):

1. "Eliminating entire product or service lines from continuing businesses."
2. "Eliminating particular products or services from within the remaining lines."
3. "Introducing completely new products or services (outside those created by acquisitions or joint ventures)."
4. "Expanding marketing efforts to new segments of customers, eliminating certain segments of customers, or both."
5. "Increasing the average prices of the company's products in conjunction with increasing customer service and sales-related expenditures."
6. "Increasing the average prices of the company's products in conjunction with decreasing customer service and sales-related expenditures."
7. "Expanding the average scope of product distribution to a greater number of outlets."
8. "Manufacturing changes. Selling or closing inefficient or underutilized plants."
9. "Relocating existing manufacturing capacity to geographic regions where production would be less costly."
10. "Centralizing or decentralizing the corporation's manufacturing capacity."
11. "Modernizing manufacturing capacity with equipment utilizing new technologies."
12. "Contracting for components, subassemblies, and products that were previously manufactured by the corporation."
13. "Beginning to manufacture components, subassemblies, and products that were previously purchased."
14. "Spreading the purchases of materials, components, and subassemblies across a greater number of suppliers."
15. "Increasing or decreasing (as compared to historic levels) the capital available for research on new products or manufacturing processes."
16. "Increasing or decreasing (as compared to historic levels) the capital available for the commercial development of new products."
17. "Filing a Bankruptcy Petition for reorganization purposes."
18. "Liquidating major assets other than plants and production equipment such as office buildings, land holdings, and blocks of securities in order to raise capital."
19. "Suspending capital expenditures for (what the respondent judged to be) a significant period of time."

Domain Change Index, originally developed by Barker and Duhaime (1997), captures changes in an organization's product-market domain. It reflects changes in the scope of industries, products, and markets in which the organization competes, measured by identifying additions or deletions of major business segments within each organization's operations over the study period and aggregating into an index score.

Change in Structure and Control Systems is an index calculated from 16 binary statements and aggregated into a final score ranging from 0-16. They fall into one of two broad categories: 1)

changes in organization structure, and 2) changes in control systems (p. 1243): Changes in organization structure (1-10) and changes in control systems (11-16).

1. "Change in the number of management levels in the corporation."
2. "Change in the span of control of the average manager in the corporation."
3. "Change in the basis for grouping operating units of the highest level of the corporation (i.e., functional vs. product groupings)."
4. "Change in the number of profit centers within the corporation."
5. "Change in the number of staff departments."
6. "Change in the influence of technically trained staff on management decisions."
7. "Change in the utilization of task forces or committees to solve problems."
8. "Change in the amount of group decision-making at the highest levels of the organization."
9. "Change in the frequency of utilization of computer technology in decision making."
10. "Change in the number of different aspects of the corporation's business that must be considered by managers when making decisions."
11. "Change in the extent of the corporation's use of cost and quality controls."
12. "Change in the extent of the corporation's use of formal planning and forecasting."
13. "Change in the extent of the corporation's use of capital budgeting."
14. "Change in the utilization of formal staff for staying abreast of market trends or information."
15. "Change in the variable component (performance bonuses) of top management's potential compensation."
16. "Change in the percentage of top management's potential compensation that is tied to the long-term health of the corporation."

Independent Variable(s): Multiple independent variables are included in the analysis as potential predictors of strategic reorientation, including unused debt capacity, financial liquidity, CEO replacement (force succession), and extent of mechanistic structure shift.

Findings: The study finds that mechanistic organizational structures significantly constrain the extent of strategic reorientation. Organizations with highly formalized, centralized, and standardized structures were less likely to pursue broad changes in strategy, structure, and control systems, despite theoretical models suggesting that such reorientation is necessary for recovery.

- 4) Bosque-Mercader L, Conroy S, Lasserson D, Mannion R, Nicodemo C, Wittenberg R (2025) Resilience of the acute sector in recovery from COVID-19 pressures. *Social Science & Medicine* 375:118062.

Goals & Scope: The study aims to examine the associations between hospital characteristics and the extent of recovery of hospital services from the COVID-19 pandemic relative to pre-pandemic levels in England.

Ownership Structure/Sector: Public; health care

Treatment of Built Environment: None

Theory Engagement: Testing. The study authors cite a model of health system resilience and operationalize resilience as the recovery of hospital direct care services. They test the factors that associate with recovery within the context of the COVID-19 pandemic, focusing on supply (e.g., number of staffed beds) and demand (e.g., disease type and prevalence of the hospital's catchment area population) factors.

Definition of Resilience/Recovery: The study authors define resilience as "the ability to be prepared for, manage, recover, and learn from shocks" (p. 2025).

Disruption Type: Pandemic

Methodology: This study employed a monthly hospital-level panel comparing pre-pandemic (2019) and post-pandemic (2021) data sourced from the Hospital Episode Statistics (HES) data for 121 English NHS acute hospitals. The study uses Ordinary Least Squares (OLS) regressions of the percentage change in elective care activity against supply, demand, and time factors to identify characteristics associated with hospital recovery rates.

Recovery/Resilience Measurement: The study authors operationalize recovery as the percentage recovery of elective care activity performed by hospitals after the COVID-19 pandemic (2021) compared to its elective care activity before the pandemic (2019). Hospital elective care activity is defined as the count of finished consultant episodes of patient had were admitted for elective care, an episode being the time a patient spends under the care of a health care provider through discharge (or death or transfer to another hospital).

Independent Variable(s): Variables are categorized into those indicating supply and demand. Supply variables relate to hospital features (size, emergency department performance, capacity of nearby hospitals, staff turnover, hospital type, region). Demand variables relate to population characteristics (age, deprivation, health status, sex, month).

Findings: The main finding of the study is that most hospital-level determinants (size, emergency department performance, hospital type, etc.) do not systematically explain recovery variation. Regional location, however, is one main exception. Hospitals located outside of London, especially those in Northern regions, are associated with a lower recovery of total elective care activity (between -22% and -19%). Demand characteristics also do not determine the total elective care recovery rate, generally speaking. An exception is health status. Specifically, a higher prevalence of atrial fibrillation and diabetes mellitus in the catchment area population was associated with a decrease in the total elective recovery rate, while stroke was associated with an increase in the total elective recovery rate. The study authors conclude that policymakers cannot use hospital supply and demand characteristics alone as a guide for target policy interventions to improve the recovery of elective care in hospitals.

- 5) Boyne GA, Meier KJ (2009) Environmental change, human resources and organizational turnaround. *Journal of Management Studies* 46(5):835–863.

Goals & Scope: The study aims to advance understanding of how changes in task environments and human resources influence organizational performance. The authors develop a turnaround model that incorporates predictors such as changes in environmental munificence and complexity, human resource changes, and strategies of retrenchment and repositioning. A novelty of this approach is extending organizational turnaround theory to the public sector, which they highlight as an understudied organizational context.

Ownership Structure/Sector: Public; education (school districts)

Treatment of Built Environment: None

Theory Engagement: Extending. The authors extend existing turnaround theory by incorporating task environment change and human resource factors. The authors adapt the turnaround framework (Pearce and Robbins 1993) to the public sector, a context they identify as neglected in prior research.

Definition of Resilience/Recovery: The study aligns with existing literature on turnaround, in that it equates recovery with organizational performance. The study defines organizational turnaround as “a recovery in performance after a period of organizational failure,” referencing Pearce and Robbins (1993) (p. 835).

Disruption Type: Chronic stressor (student standardized test scores)

Methodology: This quantitative, explanatory study utilizes a longitudinal design to examine organizational turnaround in the public sector, combining original and secondary data sources.

- The sample consists of the lowest performing quartile of school districts in 1995. Performance improvement, or turnaround, of student standardized test scores was assessed in 2000 and 2002. The study analyzes outcomes over a post-event window, tracking recovery over a seven-year period.
- Original data were collected through superintendent surveys conducted in 2000 and 2002, which captured information on district management strategies, goals, and activities. Secondary data were drawn from the Texas Education Agency, including student achievement scores on the Texas Assessment of Academic Skills (TAAS) to measure recovery, as well as district-level financial resources and student socioeconomic composition to capture elements of environmental munificence and complexity. The final sample included 140 public school districts in Texas, all identified as failing in 1995.
- Data were analyzed using descriptive statistics, correlation matrices, and robust regression techniques (a variant of OLS).

Recovery/Resilience Measurement: Performance is operationalized as student achievement, specifically, the percentage change in the Texas Assessment of Academic Skills (TAAS) standardized test pass rates from 1995 to 2002.

Independent Variable(s): The independent variables in the study analysis belong to the following categories:

1. The munificence of the task environment (e.g., abundant financial resources).

2. The complexity of the task environment (e.g., few market domains to be served).
3. The appointment of a new top manager from inside the organization (insider succession).
4. The ratio of core staff to total employees.
5. The quality of core staff.
6. Retrenchment (a reduction in the size and scope of a business).
7. Repositioning (e.g., developing new sources of revenue).

Findings: The study finds that organizational turnaround was positively associated with favorable changes in the task environment (greater resources, reduced complexity), leadership change through superintendent succession (especially insiders), and investment in teaching staff quality and quantity. Retrenchment strategies, such as a narrow focus on efficiency, showed mixed or limited effects, while repositioning strategies (e.g., external stakeholder engagement, seeking private funding) contributed positively to recovery. Overall, both environmental conditions and human resource changes were critical drivers of performance improvement.

- 6) Bustinza OF, Vendrell-Herrero F, Perez-Arostegui M, Parry G (2019) Technological capabilities, resilience capabilities and organizational effectiveness. *The International Journal of Human Resource Management* 30(8):1370–1392.

Goals & Scope: The study examines how resilience capabilities, developed through human resource practices (HRPs), mediate the relationship between technological capabilities and organizational effectiveness. The authors propose that technological capabilities alone do not sustain effectiveness, rather organizations must also build resilience through HRPs. Their conceptual model also tests whether environmental (external) uncertainty and competitive intensity moderate these relationships.

Ownership Structure/Sector: Private for-profit; manufacturing

Treatment of Built Environment: None

Theory Engagement: Extending. The authors extend established literature and concepts on technological capabilities and organizational effectiveness by introducing resilience capabilities (via HRPs) as a mediating variable linking the two.

Definition of Resilience/Recovery: The authors frame resilience as organizational adaptability and the capacity to sustain effectiveness in turbulent markets. They define organizational resilience as “the ability to dynamically reinvent an organization when circumstances change, facilitating a firm’s capacity to respond to uncertain conditions at the organizational level,” citing Bhamra, Dani, and Burnard (2011), among several others (p. 2).

Disruption Type: Not specified

Methodology: This quantitative, explanatory study utilizes original data to test the effect of technological capabilities on organizational effectiveness (performance), mediated by resilience capabilities and moderated by environmental (external) uncertainty and competitive intensity.

- Data were collected using structured survey questionnaires administered in 2012 to 205 organizations. Survey content included measures of technological capabilities, resilience capabilities, organizational effectiveness, and environmental conditions.
- Data were analyzed using Structural Equation Modeling (SEM).

Recovery/Resilience Measurement: The study operationalizes resilience capabilities (mediator variable) using five seven-point Likert scale measures (1 = disagree completely to 7 = agree completely) indicating levels of employee involvement, employee empowerment, teamwork employee capacity, employee resilience training and self-motivated learning, and employee capacity to adapt to changes. The specific survey item wordings are not included in the publication.

Independent Variable(s): The analysis included independent, mediating, and multiple moderating variables. The independent variable was an index of the extent of technological capabilities, capturing organizational access to new technology, research and development skills, product upgrading, and technology expertise.

Findings: Results show that resilience capabilities significantly mediate the positive relationship between technological capabilities and organizational effectiveness. In other words, organizations with strong HRP are better able to translate technological investments into improved outcomes. Environmental dynamism and competitive intensity showed limited moderating effects, suggesting that investments in technological and resilience capabilities enhance effectiveness across contexts.

- 7) Chang YY, Durst S, Hughes M, Kraus S, Clauss T, Chang CY (2026) From organizational resilience capability to firm performance: A time-lagged investigation. *Journal of Product Innovation Management* 0:1–27.

Goals & Scope: The goal of the study is to investigate how organizational resilience capabilities influence firm performance during and after crises. Specifically, it examines the mechanisms of incremental and radical innovation capabilities, as well as the moderating effect of strategic versus traditional human resource management practices. The study takes place in Taiwan with large multi-sector organizations, where innovative capabilities and human resource management practices are emphasized by government legislation.

Ownership Structure/Sector: Private for-profit; manufacturing and service

Treatment of Built Environment: None

Theory Engagement: Extending. The study's conceptual framework is based on Resource-Based View and dynamic capability theories. They extend these theories by demonstrating that proactively developed resilience capabilities cannot directly or automatically drive firm performance on their own. Incremental and radical innovation capabilities are hypothesized to act as distinct mechanism that translates resilience into performance.

Definition of Resilience/Recovery: The study defines organizational resilience as “the capability of organizations to bounce back from adversity, recovery, and thrive in complex, uncertain

environments” (p. 2). Authors distinguish two categories of resilience capabilities, those that are 1) proactively and 2) reactively developed. The former, proactively developed resilience, is defined as “an ability that enables firms to manage change and adapt successfully in the wake of crises and adversities” (p. 3).

Disruption Type: Pandemic

Methodology: This quantitative study follows an explanatory research design, combining both original and secondary data.

- Data collection occurred in 2021 (during the COVID-19 pandemic) and 2022 (defined as post-pandemic). A survey questionnaire was administered to a total of 881 organizations.
- The secondary data, used to estimate firm performance, were obtained from the publicly available database of the Taiwan Economic Journal, a leading credit analysis research agency. The secondary data sampling frame was sourced from a database of firms provided by the Ministry of Economic Affairs of Taiwan.
- Data were analyzed using multiple regression analysis. There are 12 models, the first four of which test resilience capabilities and human resource management practices on incremental innovative capability and radical innovative capability, both with and without an interactive effect between the two. Four models test resilience capability on Return on Investments and Return on Equity in 2021, with and without incremental and radical innovative capabilities. These four models are repeated again in 2022.

Recovery/Resilience Measurement: Organizational resilience is operationalized using an evenly weighted combination of 12 items, sourced and adapted from three previous studies. All items used a five-point Likert scale (1 = strongly disagree to 5 = strongly agree):

1. “This organization has worked on creating awareness of the pandemic and the consequences of the pandemic on the business.”
2. “This organization analyzes and assesses the impact of the pandemic on the business.”
3. “Since the beginning of the pandemic, this organization is trying to improve its disruption prevention capabilities.”
4. “This organization is currently engaged in contingency planning to prepare for potential future disruptions due to the pandemic.”
5. “This organization was able to quickly recognize that there is a threatening situation due to the pandemic.”
6. “This organization is able to gather and interpret information cues to gauge the magnitude, location, and cause of the pandemic.”
7. “This organization is able to quickly identify, formulate, and evaluate a set of possible responses to the pandemic.”
8. “This organization is able to quickly implement responses and restore business standards to minimize business impact of the pandemic.”
9. “This organization can quickly organize a formal response team of key personnel to find solutions to business issues caused by the pandemic.”

10. "This organization has an effective communication strategy internally and externally for managing the impacts of the pandemic."
11. "This organization is very successful at dealing with crises, including addressing public relations issues that can arise from this pandemic."
12. "This organization has taken immediate action to mitigate the effects of the pandemic despite the short-term costs."

Independent Variable(s): There are 4 independent variables in the study: 1) strategic human resource management practices, 2) incremental innovative capability, 3) radical innovative capability, and 4) proactively developed organizational resilience capability (see p. 22 for the operationalization of all variables).

Findings: The study finds that firm performance during crises is significantly stronger when proactively built resilience capabilities are paired with innovation capabilities. Both incremental and radical innovations act as mechanisms translating resilience into performance by providing firms with a broader set of response options, though incremental innovation is associated with a stronger, more immediate effect during a crisis. The study also finds that strategic human resource practices determine the efficacy of resilience capabilities by boosting agility, learning, and coordinating action. The authors' guidance to managers includes investing early in resilience routines (e.g., communication, readiness planning, post-crisis learning), encourage both incremental and radical innovation, effectuate human resource systems for skill development, flexibility, and coordination, as well as conduct regular resilience health checks to assess preparedness and the effectiveness of existing measures.

- 8) Chen X (2021) Nonprofit financial resilience: Recovery from natural disasters. *VOLUNTAS: International Journal of Voluntary and Nonprofit Organizations* 32(5):1009–1026.

Goals & Scope: The study explores the determinants of resilience for non-profit organizations using the case study of Hurricane Katrina. Specifically, the author investigates which organizational and contextual factors enable organizations to return to pre-disaster financial performance levels.

Ownership Structure/Sector: Private non-profit; multiple crisis-response related sectors (e.g., health care, human services, public safety, food and agriculture, etc.)

Treatment of Built Environment: None

Theory Engagement: Testing. The study tests an existing framework from the non-profit financial management field and resilience theory, applying them to the specific case of Hurricane Katrina in order to examine the theorized factors that predict non-profit financial recovery.

Definition of Resilience/Recovery: The study author defines organizational resilience as "the ability, or capacity, of an organization to bounce back to at least its original financial performance level after a disruptive event" (p. 1010).

Disruption Type: Natural hazard (Hurricane)

Methodology: This quantitative study follows an explanatory research design using longitudinal data.

- Longitudinal data cover a pre-event (baseline) year (2004), and multiple post-event years (2007, 2008, and 2013). The observation window spans 2004 to 2013, capturing one year prior to Hurricane Katrina and extending eight years post-event, coinciding with long-term recovery dynamics.
- All data were derived from secondary sources, specifically IRS reporting data on nonprofit finances. Final sample sizes for each model are 686 (total expense recovery) and 900 (net asset recovery) organizations.
- Data were analyzed using descriptive statistics and discrete-time survival analysis, implemented through binary logistic regression models.

Recovery/Resilience Measurement: Although recovery is not formally defined, it is operationalized using two measures in this analysis:

1. Total expense recovery: a binary indicator of whether an organization's total expenses returned to within 10 % of its pre-disaster (2004) level in subsequent recovery years (2007, 2008, and 2013). The 10 % threshold was selected to represent a normal performance fluctuation for nonprofits.
2. Net asset recovery: a binary indicator of whether an organization's net assets returned to within 10 % of its pre-disaster (2004) level in subsequent recovery years (2007, 2008, and 2013). The 10 % threshold was selected to represent a normal performance fluctuation for nonprofits.

Independent Variable(s): The independent variables included in the analysis are pre-disaster financial resources, revenue diversification, commercial revenue, age, and size.

Findings: The results reveal that organizations with higher levels of pre-disaster financial resources were significantly more likely to recover financially after Hurricane Katrina. Revenue diversification and reliance on commercial revenue, however, did not show consistent positive effects on recovery. Community context was also significant, with organizations in urban counties facing more competitive environments exhibiting weaker recovery outcomes. Organizational size was found to have a significant positive effect, with larger organizations more likely to achieve recovery.

- 9) Cong LW, Yang X, Zhang X (2024) Small and medium enterprises amidst the pandemic and reopening: Digital edge and transformation. *Management Science* 70(7):4564–4582.

Goals & Scope: The study authors examine whether the digitization of business operations helped Chinese SMEs better cope with the COVID-19 pandemic shock, and whether the pandemic itself induced digital technology adoption. The analysis window spans 2015 through 2021, covering Chinese micro-businesses and corporations. The authors evaluate shifts in digital adoption, including e-commerce, remote work, and electronic information systems.

Ownership Structure/Sector: Private for-profit; multi-sector

Treatment of Built Environment: None

Theory Engagement: Extending. The study extends existing firm resilience and technology adoption frameworks by introducing digitization as a dimension of organizational resilience. The study also includes unregistered microbusinesses with formal corporations to account for an understudied sector of the economy during crises.

Definition of Resilience/Recovery: The study does not provide an explicit definition of resilience or recovery.

Disruption Type: Pandemic

Methodology: The study utilized a longitudinal study design spanning 2015 to 2021 that combines original survey and interview data, with secondary administrative data. The original data sources consist of multiple waves of survey data from the Enterprise Survey of Innovation and Entrepreneurship in China (ESIEC) (for a total of 4,914 responses) and five quarters of the Online Surveys of Micro-and-Small Enterprises (OSOME), which are combined with secondary data covering the universal Chinese business registration database. Temporally, these data collection points were aligned before, during, and up to more than a year after the initial January 2020 nationwide lockdown, capturing both immediate pandemic shocks and long-term post-reopening recovery. Analytically, the study applies Ordinary Least Squares (OLS) linear regressions and difference-in-differences event studies to evaluate firm performance against pre-pandemic baselines.

Recovery/Resilience Measurement: While the study authors do not explicitly state that they operationalize recovery or resilience, they do implicitly equate multiple indicators with resilience:

1. The ability to quickly reopen ('reopening status'), measured using a binary dummy variable derived from multiple rounds of survey data collected in February, May and August of 2020.
2. Mitigated demand decline, measured as a binary dummy variable indicating whether "order declines" were a main challenge.
3. Sustainable cash flow, measured as a binary dummy variable indicating whether a firm's available cash reserves could sustain routine business operations for more than one month.
4. A positive outlook for growth, measured through a survey item eliciting the firm's assessment of its prospects and earnings expectations (the exact wording of the survey item was not disclosed).

Independent Variable(s): The independent variables used in the study included the digitalization level of the firm, firm location, a lockdown event, and several control variables, including firm size, business type, COVID intensity measures, and the economic tier of the city where the firm is located.

Findings: The study finds that greater digitalization significantly boosts firm resilience that external collaboration acts as a change agent for SMEs navigating major market crises, though this depends on the direction of knowledge flow. While outbound innovation (e.g., sharing

internal ideas with the broader market) provides a steady boost to firm growth, inbound innovation (e.g., absorbing external expertise) follows a U-shaped trajectory, meaning organizations must overcome initial integration challenges before realizing benefits. More importantly, using both innovation strategies was found to have produced a synergistic effect that reinforced organizations' resilience.

10) Cotta D, Salvador F (2020) Exploring the antecedents of organizational resilience practices – a transactive memory systems approach. *International Journal of Operations & Production Management* 40(9):1531–1559.

Goals & Scope: The study investigates how individual- and organization-level factors shape the development of organizational resilience practices in manufacturing firms. The authors examine how factors such as leadership connectedness, teamwork orientation, cooperation incentives, and role formalization influence the adoption of resilience practices through transactive memory systems. Conceptually, transactive memory systems are grounded in the observation that interactions among individuals often result in acquired knowledge about the expertise of others.

Ownership Structure/Sector: Private for-profits; manufacturing

Treatment of Built Environment: None

Theory Engagement: *Extending.* The study extends transactive memory systems (TMS) theory from the organizational behavior field as a conceptual lens for examining resilience practices, adding a new dimension to the study of resilience capabilities.

Definition of Resilience/Recovery: The study does not define resilience, but operationalizes a related construct, organizational resilience practices. These are defined as “efforts that manufacturers make to amend order-fulfillment plans in reaction to operational disruptions” (p. 1532). The authors argue that such amendments are knowledge-intensive tasks requiring input from multiple and different domain experts, making them an appropriate proxy for studying resilience practices through the lens of transactive memory systems. The authors provide illustrative examples of transactive memory systems in an organizational setting, including mutual awareness of colleagues' roles, conferring credibility on one another's specialized knowledge, and coordinating to retrieve required information.

Disruption Type: Not specified

Methodology: This quantitative, exploratory study combines secondary and original data to examine how transactive memory systems enable organizational resilience practices.

- Data were collected through a structured survey questionnaire administered to 192 manufacturing organizations.
- Data were analyzed using Structural Equation Modeling (SEM).

Recovery/Resilience Measurement: Resilience was conceptualized as the extent to which organizational actors interact through a transactive memory system for amendment of order-fulfillment plans. This was measured with 15 items on a five-point Likert scale, grouped into one of three categories with the item stem “During situations in which the original manufacturing plans cannot be executed (due to technical problems, changes in customer requests, etc.) in your company...” (p. 1543):

1. Specialization
 - a. “The specialized knowledge of several different departments is needed.”
 - b. “Each department has specialized knowledge of some relevant aspect to perform these activities.”
 - c. “Manufacturing personnel have knowledge that no other department has.”
 - d. “Different departments are responsible for expertise in different aspects.”
 - e. “Manufacturing personnel know which departments have expertise in specific areas.”
2. Credibility
 - a. “Manufacturing personnel are comfortable accepting procedural suggestions from other departments.”
 - b. “Manufacturing personnel trust that other departments’ knowledge is credible.”
 - c. “Manufacturing personnel are confident in relying on the information that other departments bring to discussion.”
 - d. “When other departments give information, manufacturing personnel double-checks it.”
 - e. “Manufacturing personnel do not have much faith in other departments’ expertise.”
3. Coordination
 - a. “People from several areas work together in a well-coordinated fashion.”
 - b. “People from several areas have very few misunderstandings about what to do.”
 - c. “People from several areas have to backtrack and start over a lot.”
 - d. “People from several areas accomplish these activities smoothly and efficiently.”
 - e. “There is much confusion about how to accomplish these activities.”

Independent Variable(s): The study includes four independent variables, grouped into two categories: individual-level (teamwork orientation, organizational connectedness) and organization-level (cooperation incentives, resource flexibility).

Findings: The results reveal that the ability of employees to integrate information and knowledge in support of enacting resilient practices is strongly influenced by both individual- and organization-level factors. The extent of leadership’s network of personal contacts inside the organization, cooperation incentives at the organization-level and role formalization were positively related with the development of resilience practices. The effect of teamwork orientation emerged only when no formal cooperation incentives were in place, suggesting a substitution effect between intrinsic motivation and extrinsic rewards in supporting resilience practices.

11) Dahlhamer JM, Tierney KJ (1998) Rebounding from disruptive events: Business recovery following the Northridge earthquake. *Sociological Spectrum* 18(2):121–141.

Goals & Scope: The study investigates the determinants of business recovery following the 1994 Northridge earthquake near Los Angeles, California. The authors test a model of business recovery that considers organizational characteristics, disaster impacts, use of post-disaster aid, and prior disaster experience.

Ownership Structure/Sector: Private for-profit; multi-sector

Treatment of Built Environment: Comprehensive (Includes multiple indicators of physical damage, including physical damage, utilities disruptions, and hazard intensity).

Theory Engagement: *Testing.* The authors apply existing frameworks from household and community disaster recovery and organizational survival and ecology to examine business recovery.

Definition of Resilience/Recovery: The authors do not directly define recovery. However, based on their operationalization, the authors implicitly define recovery as business “well-being”, a binary measure (0 = not recovered and 1 = recovered) captured 18 months post-event.

Disruption Type: Natural hazard (Earthquake)

Methodology: The study uses a quantitative, explanatory research design.

- Data were collected approximately 18 months post-event, corresponding to long-term recovery dynamics.
- Data were collected via a stratified random survey of 1,110 organizations.
- Data were analyzed using descriptive statistics and logistic regression.

Recovery/Resilience Measurement: Recovery was measured dichotomously (1 = recovered, “better off”, or “about the same as before”; 0 = not recovered, “worse off than before”) (p. 131).

Independent Variable(s): Independent variables fall into one of four categories: firm characteristics (own or lease, ownership or franchise, financial condition, sector), disaster impacts (physical, business interruption, utilities, shaking intensity), loss containment measures (post-disaster aid), and previous disaster experience.

Findings: Results reveal that organizational size, earthquake shaking intensity, and operational disruption were the most significant predictors of recovery. Of the direct impacts, business interruption had a larger impact on recovery relative to direct physical damage. Larger organizations and those in less severely shaken areas were more likely to recover, while reliance on post-disaster aid was negatively associated with recovery. This latter finding most likely reflects both the severity of losses and added debt burdens.

- 12) Danso H, Yaw Akomea S, Agyapong A (2024) Organizational capabilities and resilience of small and medium-sized construction firms in Ghana: The mediating role of innovation and moderating effect of environmental factors. *Engineering Management Journal* 36(4):398–414.

Goals & Scope: The study authors examine the relationship between organizational capabilities and the resilience of SME construction firms in Ghana, specifically assessing whether innovation mediates and environmental factors moderate this relationship.

Ownership Structure/Sector: Private for-profit, private non-profit.

Treatment of Built Environment: None

Theory Engagement: *Extending.* The study explicitly builds its hypotheses using existing theoretical frameworks, specifically the People Capability Maturity Model (People CCM) and Evolution Theory. Additionally, the study introduces innovation and environmental factors as mediating and moderating factors, respectively, to explain the relationship between organizational capabilities and resilience.

Definition of Resilience/Recovery: The study defines resilience as “the ability of a firm or a system to highly maintain its functionality when there is a shock”, citing Holling (1973) (p. 403).

Disruption Type: Chronic stressor

Methodology: The study utilized a cross-sectional survey study design using original data. The final sample size is 261 firms across the 16 provinces of Gaza. Statistical analyses used include descriptive statistics, Pearson correlations, Confirmatory Factor Analysis, and hierarchical multiple regressions.

Recovery/Resilience Measurement: The study uses three main constructs to measure resilience, consisting of: 1) resource resilience, 2) anticipated capabilities resilience, and 3) network relationships resilience. The three constructs are measured by seven-point Likert scale survey items (1= strongly disagree, 7= strongly agree) (p. 405):

1. Resource Resilience:
 - a. “Our financial resources are essential to planning and preparing for an emergency.”
 - b. “Our human resources are critical to resilience.”
 - c. “Our technological resources are critical to resilience.”
 - d. “We align our resources and processes in response to environmental changes.”
 - e. “We structure our resource base to react to the changing business environment.”
 - f. “We configure our resources and processes in response to the dynamic environment.”
2. Anticipated Capabilities Resilience:
 - a. “We scan the environment to detect critical developments.”

- b. “We build multiple plans for different scenarios.”
 - c. “We have alternative courses of action during crises.”
 - d. “We act faster to mitigate potential harm.”
 - e. “We adjust better when dealing with emergencies.”
 - f. “We take actions in the present to be well positioned in the post-crisis environment.”
 - g. “We are able to maintain high situational awareness at all times.”
 - h. “We are able to provide a quick response to the disruptions.”
3. Network Relationships Resilience:
- a. “We have external networks.”
 - b. “We have social networks for knowledge.”
 - c. “We have networks for dissemination of innovation.”
 - d. “We collaborate with other organizations.”

Independent Variable(s): The independent variables used in the study included organizational capabilities, innovation, environmental factors, and several control variables, including firm size, firm project capacity.

Findings: The study found that organizational capabilities, firm innovation, and environmental factors are all significantly and positively related. Importantly, the authors found that innovation mediates the relationship between organizational capabilities and resilience meaning internal capabilities drive innovation, which subsequently reinforces the firm’s resilience to shocks. Building stronger operational, human resource, and ICT capabilities directly increases resilience to unexpected turbulence. Environmental factors partially moderate resilience, specifically, the interaction between capabilities and market turbulence.

13) DesJardine M, Bansal P, Yang Y (2017) Bouncing back: Building resilience through social and environmental practices in the context of the 2008 global financial crisis. *Journal of Management* 45(4):1434–1460.

Goals & Scope: The study examines how different types of social and environmental practices (SEPs) influenced organizational recovery during the 2008 Global Financial Crisis. The authors build on the work of Bansal, Jiang, and Jung (2015) to investigate the role of strategic SEPs relative to tactical SEPs in enhancing resilience. They argue strategic SEPs build resilience by creating interdependencies and stability, while tactical practices support accelerated recovery.

Ownership Structure/Sector: Private for-profits; multi-sector

Treatment of Built Environment: None

Theory Engagement: *Extending.* The study extends resilience theory, combining it with work on social and environmental practices.

Definition of Resilience/Recovery: The study conceptualizes resilience as consisting of both the severity of loss and time to recover. The authors adopt Gunderson and Pritchard’s (2002)

definition of resilience, which is “both the ability of a system to persist despite disruptions and the ability to regenerate and maintain existing organization” (p. 1436). They conceptualize recovery as a component of resilience, defined as the system returning to its original state (p. 1439).

Disruption Type: Economic shock

Methodology: The study utilizes a quantitative, explanatory research design.

- Data were observed from 2008 to 2013, during the financial crisis.
- All data for this analysis come from secondary sources (e.g., Kinder, Lydenberg, and Domini Statistical Tool for Analyzing Trends in Social and Environmental Performance, Center for Research in Security Prices, CompStat, Institutional Brokers’ Estimate System, Asset4). The final sample consists of 963 organizations.
- Data were analyzed using descriptive statistics, Ordinary Least Squares (OLS) two-stage least squares (2SLS), and Cox survival analysis.

Recovery/Resilience Measurement: The study operationalizes resilience as consisting of two components:

1. Severity of Loss: The percentage drop in a firm’s stock price from the closing price immediately preceding the crisis to the lowest point of the stock price within 1 year of the crisis.
2. Time to Recovery: The time it takes for the firm’s stock price to return to its precrisis level.

Independent Variable(s): There are two independent variables, only nominally described in the article. The first is strategic SEPs (example indicators given include CEO and gender/minority diversity, emissions and hazardous waste management, use of alternative fuels, family and pension benefit programs, etc.). The second is tactical SEPs (example indicators given include charitable giving strength, innovative giving, non-U.S. charitable giving, support for housing, support for education, volunteer programs, etc.).

Findings: The authors find that strategic SEPs are associated with significantly smaller stock price losses and faster recovery. Tactical SEPs, however, were found to have little effect on reducing losses, though they showed slight support for accelerated recovery speed. Results suggest long-term, embedded practices are more effective than short-term actions in promoting resilience.

14) Dietch EA, Corey CM (2011) Predicting long-term business recovery four years after Hurricane Katrina. *Management Research Review* 34(3):311–324.

Goals & Scope: The aim of the study was to examine the ongoing recovery efforts of surviving organizations four years following Hurricane Katrina, focusing on factors thought to influence

long-term recovery. These factors include internal factors (e.g., organizational size), population-related issues (e.g., loss of customer base), and macro variables (e.g., neighborhood recovery).

Ownership Structure/Sector: Private for-profit; multi-sector

Treatment of Built Environment: Explicit (the built environment is considered explicitly, but only as part of the sample inclusion criteria. Specifically, the study surveyed only organizations that had completed the majority of physical repairs to facilities)

Theory Engagement: *Testing.* The study tests whether bridging or bonding strategies (derived from existing social capital theory) are more predictive of recovery following Hurricane Katrina in the New Orleans metropolitan area.

Definition of Resilience/Recovery: The study does not define recovery. However, based on their operationalization, the authors implicitly define recovery as organizational performance relative to pre-Katrina levels, measured categorically and continuously.

Disruption Type: Natural hazard (Hurricane)

Methodology: The quantitative study employed a cross-sectional survey design in order to identify predictors of organizational recovery using original data.

- Data were collected Spring 2009, approximately 3-4 years after Hurricane Katrina, corresponding to long-term recovery dynamics.
- Data were collected through a structured survey questionnaire administered to 186 organizations that had survived the hurricane and were still operating at the time of the survey.
- Data were analyzed using descriptive statistics, ANOVA, and multiple regression analyses (ordered logistic, OLS).

Recovery/Resilience Measurement: The study conceptualizes organizational recovery as organizational performance, which is operationalized using two measures:

1. A categorical measure, in which respondents indicated whether performance was better, worse or the same compared to pre-Katrina performance.
2. A continuous measure, in which respondents estimated the percentage increase or decrease in business since Hurricane Katrina.

Independent Variable(s): Independent variables were grouped into four broad categories and include Industry sector, internal business features) size, supply-line problems, sufficiency of capital, and perceived quality of managerial decision making), population issues (customer loss, labor shortages), and macro level variables (neighborhood recovery progress, state and local government recovery progress, lack of Federal assistance, declining national economy).

Findings: The study found that long-term business recovery after Hurricane Katrina was shaped most strongly by internal organizational factors, including sufficient capitals, strong supplier networks, and effective managerial decision-making. Population-related challenges, such as

customer loss and labor shortages, significantly hindered recovery. Macro-level factors, such as neighborhood recovery and government assistance, were less predictive. Overall, internal resources and decision-making capacity emerged as the most important determinants of sustained organizational performance.

- 15) Engelen A, Huesker C, Rieger V, Berg V (2024) Building a resilient organization through a pre-shock strategic emphasis on innovation. *Journal of Product Innovation Management* 41(1):36–61.

Goals & Scope: The study investigates why certain organizations survive systemic shocks better than others, examining whether pre-shock strategic emphasis on innovation enhances organizational resilience during crises. Specifically, the authors test how prior innovation drives stability and flexibility, two primary dimensions of resilience. Importantly, it shows how an organization's profits before a crisis change these dynamics, demonstrating when past innovation acts as a safety net and when it becomes a liability.

Ownership Structure/Sector: Private for-profit; multi-sector

Treatment of Built Environment: None

Theory Engagement: *Extending.* The study draws on two theoretical backgrounds: 1) the theory of organizational resilience (Gittell et al. 2006; Sutcliffe and Vogus, 2003), that argues an organization's pre-shock features can determine how well it endures and recovers from a shock, and the behavioral theory of the firm (Gavetti et al., 2012; Rajagopalan and Spreitzer, 1997) that argues strong past profitability creates an unwillingness to use resources in new ways that may be necessary at the onset of a crisis. The study authors identify a paradox that past profitability during normal times reduces the effect size of innovation on organizational resilience during crisis onset. This relationship does not apply to all innovations, suggesting that organizational emphasis on innovation as part of a resilience strategy needs to consider prior organizational performance (e.g., profitability) and the particular innovation.

Definition of Resilience/Recovery: Rather than define organizational resilience directly, the study defines flexibility and stability, two major components of organizational resilience. Flexibility is defined as the ability to rapidly recover to the pre-shock state, while stability is defined as a reduced severity of losses.

Disruption Type: Economic shock

Methodology: The study utilizes a quantitative, explanatory research design.

- The temporal design includes measuring the dependent variable stability (severity of loss) and flexibility (time to recovery). Stability is measured as the percentage drop to the lowest stock price in the 12 months leading to the event, while flexibility is measured as the number of days required to regain pre-event stock price within a three-year window. Independent variables are measured over the five years preceding event

onset to reflect the fact that innovating, knowledge- and skills-building are ongoing processes that take time before effects are felt.

- The sample includes 994 organizations, with a smallest sample size of 424 organizations across the multiple models estimated.
- All data are sourced from secondary sources and publicly available data, eight in total: Compustat database (control variables and research and development expenses), Center of Research in Security Prices (CRSP)(daily stock price), United States Patent and Trademark Office (USPTO), firm public annual reports (strategy constructs) supplemented with RavenPack News Analytics (media releases), Execucomp (leadership control variables), Boardex (board level control variables), and Linder, Lydenberg and Domini (KLD) (firm-level control variables).
- The analytical approach is ordinary least squares and Cox model regressions. Separate models are estimated for severity of loss (stability) and time to recovery (flexibility).

Recovery/Resilience Measurement: Resilience is deconstructed into two components: stability and flexibility (recovery).

1. Stability is measured by computing the severity of loss (impact) as the absolute percentage change in each organization's stock price between the closing price prior to the financial crisis onset and the lowest stock price reached in the following 12-month period. The variable is multiplied by -1, so low values indicate high severity of loss and high values indicate low severity of loss.
2. Flexibility is measured as the time to recovery, that is, the number of days before an organization's stock price regained its precrisis level (closing price as of September 16, 2008). The time for the stock price recovery is limited to the first 3 years following the financial crisis onset.

Independent Variable(s): Independent variables include research and development intensity, count of patents, quality of patents, count of new product introductions and leadership's focus on innovation. The moderating variable tested was the organization's pre-event profitability. Control variables include organizational age, size, capital intensity, financial leverage, intangible assets, slack resources, pre-event stock price, strategic and tactical social and environmental practices (SSEPs, TSEPs), executive compensation, financial and risk management strategies, corporate-governance-related variables (e.g., board size), industry, and time of stock price minimum (year-month dummy).

Findings: The study finds that innovation is not only a source of competitive advantage in normal times but also protects organizations against unexpected systemic shocks by improving organizational stability and flexibility. New product innovations enhance both stability and flexibility irrespective of past profitability. A top management innovation focus directly enhances stability. Conversely research and development intensity and patent measures enhance resilience only when prior profitability is low. Although highly profitable organizations perform better overall, strong past profitability can create strategic complacency that prevents management from fully leveraging research and development and patent assets during downturns. For the time to recover stock prices to pre-event levels, on average about a third of

stock recovered within a year, two-thirds within two years, and eighty percent within three years. Twenty percent had not recovered by the end of the study's three-year observation window.

16) Fernández-Pérez de la Lastra S, Martín-Alcázar F, Sánchez-Gardey G (2022) Developing the ambidextrous organization. The role of intellectual capital in building ambidexterity: An exploratory study in the haute cuisine sector. *Journal of Hospitality and Tourism Management* 51:321–329.

Goals & Scope: The study investigates how organizations develop organizational ambidexterity through different configurations of intellectual capital. The authors model three potential pathways: 1) through human capital, 2) social capital, and 3) organizational capital.

Ownership Structure/Sector: Private for-profit; tourism and hospitality

Treatment of Built Environment: None

Theory Engagement: *Extending.* The study extends and adapts the organizational ambidexterity framework by linking it to intellectual capital.

Definition of Resilience/Recovery: The study does not define recovery or resilience. Rather, it examines a closely related construct, organizational ambidexterity (OA). The study defines OA as an organization's ability to combine exploitation (efficiency in executing normal activities, p. 321) and exploration (ability to adapt to change by exploring new opportunities, p. 322).

Disruption Type: Not applicable

Methodology: The quantitative study utilizes an exploratory research design.

- Data were collected using a structured survey questionnaire administered to 152 organizations. The survey instrument included measures of OA along with contextual variables such as external collaborations, innovation, Michelin recognition, workforce size, and performance indicators.
- Data were analyzed using hierarchical and k-means cluster analysis.

Recovery/Resilience Measurement: OA is operationalized through three seven-point Likert scale items, each capturing one path by which intellectual capital contributes to OA:

1. "In our restaurant all the chefs develop innovation activities, in addition to carrying out their daily activities efficiently" (human capital).
2. "In our restaurant we have workers focused on innovation, while others are dedicated to efficiently developing daily work" (social capital).
3. "Our restaurant has units dedicated specifically to innovation and other units dedicated specifically to implement usual activities" (organizational capital).

Independent Variable(s): The independent variables for this study are the grouping variables and include organizational ambidexterity through human capital, social capital, and organizational capital.

Findings: The results reveal two distinct profiles of organizations: 1) those with a high focus on OA, leveraging all three capitals together, and 2) those with a low focus, relying mainly on generalist human capital. Restaurants in the high-OA cluster demonstrated stronger innovation, greater collaboration, higher Michelin recognition, larger workforces, and superior performance outcomes. Across both groups, human capital emerged as the most critical driver of ambidexterity.

17) Gittell JH, Cameron K, Lim S, Rivas V (2006) Relationships, layoffs, and organizational resilience: Airline industry responses to September 11. *The Journal of Applied Behavioral Science* 42(3):300–329.

Goals & Scope: This study investigates how relational and human resource factors influence organizational resilience during the 9/11 terrorist attack. Specifically, the study examines how layoffs, resources, profitability, and productivity influence the ability of airlines to operate and recover following a severe disruption. By framing resilience as being influenced not only by financial and operational resources, but also relational reserves (e.g., trust, respect, shared goals), the study broadens understanding of the organizational factors that support recovery.

Ownership Structure/Sector: Private for-profit; transportation

Treatment of Built Environment: None

Theory Engagement: *Extending.* The study extends and broadens resilience theory by adding a human-relational dimension. The authors extend concepts of resilience by introducing the idea of relational reserve as critical resources that buffer organizations during crises.

Definition of Resilience/Recovery: The study defines organizational resilience as the “maintenance of positive adjustment under challenging conditions, the ability to bounce back from untoward events, and the capacity to maintain desirable functions and outcomes in the midst of strain” (p. 303).

Disruption Type: Security hazard

Methodology: This mixed-methods explanatory study utilized a longitudinal research design to test the impact of precrisis financial reserves and business models on post-event layoffs and stock price recovery.

- To assess recovery, quarterly data were gathered from December 2001 through September 2005, providing a four-year post-event observation window aligned with long-term recovery dynamics.
- Quantitative data were obtained from publicly available secondary sources. Longitudinal quarterly data covering the period 1987–2000 were collected for 10 major airlines.

- Data were analyzed using Spearman's rank-order correlations. Longitudinal data were examined through descriptive statistics and random effects regression models.

Recovery/Resilience Measurement: Recovery was operationalized as the percentage recovery of stock prices to pre-event levels.

Independent Variable(s): Multiple independent variables were measured in the analysis, including layoffs, financial reserves, relational reserves, business model viability, employee productivity, and capital productivity.

Findings: Results reveal that employee layoffs, rather than accelerating recovery, hindered organizational resilience, leading to weaker stock performance over the following four years. Organizations that maintained relational reserves and had stronger financial resources and viable business models were better able to avoid layoffs and demonstrated faster recovery. The study highlights the importance of sustaining employment relationships relative to financial strength in supporting organizational resilience.

18) Halkos G, Skouloudis A, Malesios C, Evangelinos K (2018) Bouncing back from extreme weather events: Some preliminary findings on resilience barriers facing small and medium-sized enterprises. *Business Strategy and the Environment* 27(4):547–559.

Goals & Scope: The study seeks to identify barriers to developing organizational resilience to extreme weather events. The authors argue that both internal barriers (e.g. lack of relevant training) and external barriers (e.g., inadequate support from trade associations/business chambers) contribute to resilience.

Ownership Structure/Sector: Private for-profit; retail and manufacturing

Treatment of Built Environment: None

Theory Engagement: *Extending.* The study extends existing theoretical work on organizational resilience by combining with theoretical work on barriers to organizational adaptation, distinguishing between external and internal barriers.

Definition of Resilience/Recovery: The study defines resilience as “the ability to withstand, to adapt and to quickly recover from stresses and shocks”, referencing the European Commission (2012) (p. 548).

Disruption Type: Natural hazard (Extreme weather event)

Methodology: This quantitative, explanatory study draws on original data to investigate barriers that constrain SME's resilience to extreme weather events.

- The study does not disclose the date of data collection, rather they indicate that the study context takes place in an area of Greece impacted by flooding in previous years.

- Data were collected through structured survey questionnaires administered to 109 organizations. The survey included 25 Likert scale items capturing perceptions of internal and external barriers, such as resource constraints and regulatory complexity.
- Data were analyzed using Structural Equation Modeling (SEM).

Recovery/Resilience Measurement: The study treats resilience as a capacity that is either constrained or enabled by barriers. The authors model resilience indirectly through latent constructs representing internal and external barriers. The study assesses the structures that inhibit resilience. The study used 25 five-point Likert scale items (1 = strongly disagree to 5 = strongly agree) as indicators that load onto latent constructs (p. 558):

1. "Lack of time to design, implement and monitor such resilience measures"
2. "Lack of relevant training and expertise of members of the staff"
3. "Financial constraints"
4. "Absence of clear benefits for the firm"
5. "The relevant management cost is high"
6. "It incurs additional, bureaucratic, internal procedures"
7. "It may interrupt other (important) operational processes within the firm"
8. "Doubts about the effectiveness of such actions and their objectives"
9. "Difficulties in evaluating comprehensively related environmental risks"
10. "Previous experience with non-financial management systems proved they are inefficient within my enterprise"
11. "They may bring forward drastic and unwanted changes to my enterprise"
12. "I have more critically important issues to engage with"
13. "The costs of consulting in business continuity planning is high"
14. "Business continuity consultants serve their intrinsic interests, which exceed their role in improving business operation and performance"
15. "Business continuity consultants will offer low quality as well as largely prescriptive and/or bureaucratic services to the firm"
16. "The volatile economic environment influences the importance attached to resilience measures against EWEs"
17. "There are no economic incentives to motivate engagement in resilience measures"
18. "The implementation of resilience measures to EWEs has no value in the market place in which my enterprise operates"
19. "Lack of related promotion activities by apposite governmental bodies"
20. "Inadequate information provision by the authorities on the design and implementation of resilience measures to EWEs"
21. "The regulatory framework is complex and strict and undermines any attempts to endorse resilience-related modifications within the enterprise"
22. "Mechanisms of external support are of low quality and inconsistent"
23. "Mechanisms of external support lack knowledge of the intrinsic characteristics of the sector in which my enterprise operates"
24. "The trade associations/business chambers my enterprise pertains to offer inadequate support to resilience enhancement"

25. "Absence of clear guidance, information provision to increase awareness as well as assistance by other primary stakeholders of the firm on how to enhance resilience to EWEs"

Independent Variable(s): None. The study uses SEM to create a measurement model of latent constructs of resilience barriers; it does not test a relationship between independent (and dependent) variables.

Findings: The study finds that organizational resilience is mostly constrained by internal barriers, particularly limited resources and managerial perceptions that resilience measures are overly costly or bureaucratic. External barriers, such as regulatory complexity, inadequate institutional support, and weak guidance from trade associations also significantly hinder resilience, while some influences were found to be not significant, such as cultural attitudes.

19) Herbane B (2020) Locational contiguity and business continuity: Perceived organizational resilience of small- and medium-sized enterprises in U.K. business parks. *Sage Open* 10(2):2158244020927417.

Goals & Scope: The study examines how locational attributes (proximity to other organizations within business parks) and social networks influence perceived organizational resilience. The author develops a conceptual approach to resilience and assesses whether spatial clustering of organizations influences perceived resilience in ways comparable to social capital (e.g., broad social network connections).

Ownership Structure/Sector: Private for-profit; sector not specified

Treatment of Built Environment: Comprehensive (the analysis includes indicators of access to physical resources and spatial proximity to other organizations).

Theory Engagement: *Developing.* The author develops a conceptual framework for resilience by examining locational and social network factors as predictors of resilience.

Definition of Resilience/Recovery: The study defines resilience as the ability to "adapt to and recover from circumstances that are perceived within the system to fall outside the range of normal and expected disturbances", quoting Comfort et al. (2010, p. 9) (p. 2).

Disruption Type: Natural hazard (Not specified)

Methodology: The study adopts a quantitative, explanatory research design based on original survey data.

- Data were collected through structured survey questionnaires administered between 2014 and 2015, yielding responses from 268 organizations.
- Data were analyzed using descriptive statistics, correlation analyses, and Ordinary Least Squares (OLS) regression models.

Recovery/Resilience Measurement: Resilience is conceptualized across four dimensions: active (formal interventions, such as emergency plans), temporal (learning from experience and associated outcomes), posture (resilience culture of management), and performance (improved recovery). It was assessed using a composite index derived from 17 indicators, each aligned with one of the four dimensions and measured with either dichotomous items or five-point Likert scales (1 = strongly disagree to 5 = strongly agree). While the exact survey item wordings are not provided, the authors report nominal short descriptions for each indicator, grouped by resilience dimension:

1. Active (plans for major interruption, testing of plans, formal employee roles, awareness initiatives, training activities, certification such as ISO22301/22313 or ISO31000, contractual requirements)
2. Performance (reduced insurance premiums, reduced operational downtime, improved business performance)
3. Temporal (experience of interruption in the previous 5 years, successful recovery, resilience since formation)
4. Posture (influenced by high media profile business interruptions, influenced by high profile interruptions in their industry, interruptions can be prevented, interruptions can be shortened)

The analysis also includes an indicator of whether the organization had previously experienced a “successful recovery,” however, the author does not clarify how recovery was defined.

Independent Variable(s): The analysis includes two main categories of independent variables. These are locational attributes (firm location value, history, vulnerability, influence of nearby organizations’ experiences) and social networks, including scope (e.g., membership in groups/networks), quality (e.g., trust, reciprocity, knowledge transfer), and benefits (e.g., access to resources, information, support).

Findings: Results reveal locational attributes were positively and significantly associated with perceived resilience across most dimensions, specifically temporal, posture, and performance. Social networks show a negative or nonsignificant association. The author concludes that spatial clustering in business parks contributes more to resilience than broader social networks connections, highlighting the importance of place-based perspectives on organizational resilience.

20) Horvath A, Brandtner C, Powell WW (2018) Serve or conserve: Mission, strategy, and multi-level nonprofit change during the great recession. *VOLUNTAS: International Journal of Voluntary and Nonprofit Organizations* 29(5):976–993.

Goals & Scope: The study seeks to understand how internal organizational practices influence organizational experiences of and reactions to changes in their environments. Specifically, the authors examine how the use of strategic plans and organizational missions that focus on providing services to the poor predict insolvency following the 2008 Global Financial Crisis.

Ownership Structure/Sector: Private non-profit; multi-sector

Treatment of Built Environment: None

Theory Engagement: *Extending.* The study extends open systems theory by shifting focus from external environmental conditions to how internal organizational practices and routines influence responses to external shocks.

Definition of Resilience/Recovery: The study does not define resilience or recovery. The authors frame survival, the opposite of insolvency, as a central indicator and goal of organizational resilience. A related (or inverse) construct (organizational insolvency) is operationalized. Insolvency is expressed in two ways: 1) in terms of liabilities to total assets, and 2) in terms of performance (see below Recovery/Resilience Measurement).

Disruption Type: Economic shock

Methodology: This mixed-methods study combines exploratory and explanatory approaches within a longitudinal research design (2005 to 2010).

- The authors define 2008 to 2010 as the crisis period, so the dataset captures the immediate shock of the Great Recession but not the longer-term recovery.
- Quantitative data were obtained from secondary sources, specifically, IRS reporting data on financial performance for nonprofits. For the longitudinal component, baseline data were from 2005, with annual observations from 2006 to 2010. Qualitative data were collected through interviews, and the final sample included 196 organizations.
- Quantitative data were analyzed using descriptive statistics along with negative binomial and Ordinary Least Squares (OLS) regression models to examine patterns of insolvency and spending changes. Qualitative interview data were analyzed to capture how organizations experienced and responded to the crisis.

Recovery/Resilience Measurement: Insolvency (conceptualized as the inverse of resilience) was operationalized in two ways:

1. The ratio of year-end total liabilities to total assets, aggregated across 2008 to 2010.
2. Year-to-year percentage changes in total expenditures, with decreases signaling performance contractions, zero indicating stability, and positive values indicating positive performance.

Independent Variable(s): Two independent variables are included in the analysis: 1) a binary indicator of whether the organization had a strategic plan in 2005, and 2) a binary indicator of whether the organization provided services to the poor.

Findings: Results reveal that organizations with strategic planning practices were less likely to face insolvency, while organizations with missions oriented toward serving the poor tended to increase spending despite financial pressure. Rather than uniformly demonstrating stability, poverty-oriented missions sometimes drove greater expenditures, prioritizing present-day service delivery over the survival of the organization. By contrast, organizations without poverty

missions focused on conserving resources, while those without strategic planning practices were the most vulnerable to insolvency. The results highlight that organizational routines and internal capacities can buffer against external shocks.

21) Iborra M, Safón V, Dolz C (2020) What explains the resilience of SMEs? Ambidexterity capability and strategic consistency. *Long Range Planning* 53(6):101947.

Goals & Scope: The article examines the antecedents of organizational resilience during the 2008 Global Financial Crisis. The authors argue that resilience emerges from organizational ambidexterity (experimentation, adaptation, exploration) and strategic consistency (reliability, consistency, exploration). They seek to test the relationship between ambidexterity and survival and recovery, as well as strategic consistency in supporting survival and recovery.

Ownership Structure/Sector: Private for-profit; manufacturing

Treatment of Built Environment: None

Theory Engagement: *Extending.* The study extends the theoretical work on organizational ambidexterity to include strategic consistency, arguing for a combined effect of these two in explaining organizational resilience.

Definition of Resilience/Recovery: The study defines resilience as “the success of firms in anticipating, dealing with, and recovering from financial duress by means of their abilities, actions, and behaviors,” citing Meyer (1982) (p. 1). They conceptualize resilience as consisting of organizational survival and recovery.

Disruption Type: Economic shock

Methodology: This quantitative, explanatory study employed a longitudinal design based on secondary data.

- The data cover 2005 to 2013. The authors delineate three distinct phases relative to the Global Financial Crisis: pre-crisis (2005-2008), crisis (2009-2012) and post-crisis (2013). In addition to providing insights into pre-crisis and crisis dynamics, the study also aligns with long-term (1 year) recovery dynamics.
- Secondary data were obtained from the Bureau Van Dijk ORBIS database. The total sample size is 2,765 small- and medium-enterprises. Key variables extracted from the database include size, survival status, age, and financial data.
- Data were analyzed using binary logistic regression for the organizational survival analysis, and Ordinary Least Squares regression for the recovery analysis (continuous).

Recovery/Resilience Measurement: The study operationalizes resilience as a measure of two additional metrics, survival and recovery, which serve as the two dependent variables in the study analysis:

1. Organizational survival is operationalized as a binary measure and captures whether a firm remained active through 2013.
1. Recovery is operationalized as the natural logarithm of sales in 2008 subtracted from sales in 2013.

Independent Variable(s): Independent variables are organizational ambidexterity, strategic consistency, and their interaction term.

Findings: The study finds that organizational ambidexterity has a strong positive and significant effect on both survival and recovery, supporting its role as an important dynamic capability. Strategic consistency, while not significant for survival, was positively associated with recovery, though with a small effect size. The interaction between ambidexterity and consistency also showed a marginally significant positive effect on recovery.

22) Jung K, Song M (2014) Linking emergency management networks to disaster resilience: Bonding and bridging strategy in hierarchical or horizontal collaboration networks. *Quality & Quantity* 49(4):1465–1483.

Goals & Scope: The study seeks to understand how structural arrangements for collaboration within emergency management networks influence disaster resilience. Specifically, the study examines the effect of bonding and bridging networks in horizontal and vertical emergency management networks on the perceived level of organizational resilience.

Ownership Structure/Sector: Public and private non-profit; crisis response sector (i.e., local government, fire stations, police stations, and non-governmental organizations).

Treatment of Built Environment: None

Theory Engagement: *Extending.* The study extends existing resilience frameworks to include theoretical insights from social network theory. Specifically, they combine social network theory with existing resilience measurement frameworks.

Definition of Resilience/Recovery: The study defines resilience broadly as “the capacity to adopt the existing resources and skills to new situations and operating conditions,” quoting Comfort (1999, p. 21). Resilience is conceptualized as four dimensions: robustness, redundancy, resourcefulness, and rapidity.

Disruption Type: Natural hazard (Typhoon, flooding)

Methodology: This quantitative, explanatory study utilizes a cross-sectional research design employing original data.

- The analysis is not anchored to a particular event; flooding and typhoons occur on an annual basis.
- Data were collected through structure survey questionnaires administered to 130 organizations.

- Data were analyzed using social network analysis to calculate the strength of bonding and bridging strategies, followed by regression models to test the relationship between network measures and the resilience index. Descriptive statistics were also used to summarize organizational characteristics and resilience scores.

Recovery/Resilience Measurement: Resilience was measured using an index adapted from Bruneau et al. (2003) and Andrew and Carr (2013). The index was constructed from four aggregated items, each corresponding to a dimension of resilience rated on a five-point Likert scale (0 = strongly disagree to 4 = strongly agree):

1. “Would you agree that your [organization] has the ability (or has been able) to overcome operational disruptions immediately caused by a disaster?” (Robustness).
2. “How would you rank your rapidity of providing assistance to disaster victims with the resources that you have?” (Rapidity).
3. “Do you agree that your organization is resourceful in meeting the needs of disaster victims and their communities?” (Resourcefulness).
4. “Do you agree that your organization has the ability to carry out routine tasks and at the same time help victims and their communities cope with disasters?” (Redundancy).

Independent Variable(s): The analysis included two key independent variables acquired from a social network analysis: network bonding strategies, measured using closeness centrality, and network bridging strategies, measured using betweenness centrality.

Additional independent variables in the analysis included collaboration structure (hierarchical and horizontal), institutional resources, urban context, environmental vulnerability, prior disaster experience, economic status, and social vulnerability.

Findings: Results reveal that network strategies significantly impact organizational resilience. Organizations with strong bonding ties exhibited higher levels of robustness and redundancy, while those with strong bridging ties showed greater resourcefulness and rapidity. Both bonding and bridging strategies were found to be complementary, highlighting the importance of diverse networking strategies for enhancing resilience.

Resilience was also positively associated with being located in an urban area, having greater institutional resources (existence of emergency management within an organization), higher environmental vulnerability (location in a coastal area), and prior disaster experience. In contrast, higher social vulnerability (proportion of senior population) was linked to lower perceived resilience, while economic status (Gross Regional Domestic Product) showed no significant relationship with resilience.

23) Karman A (2020) An examination of factors influencing the application of mechanisms of organizations’ resilience to weather extremes. *Business Strategy and the Environment* 29(1):276–290.

Goals & Scope: The study aims to examine how organizations apply resilience mechanisms to cope with extreme weather and what factors shape their adoption. Specifically, it analyzes which mechanisms are applied across different disaster phases, compares their frequency of use, and evaluates how these mechanisms contribute to organizations' resilience. Factors influencing the adoption of resilience mechanisms are conceptualized as multilevel, consisting of factors at the community, organizational, and individual levels, as well as related to the extreme weather event.

Ownership Structure/Sector: Public and private for-profit; multi-sector (i.e., manufacturing, professional services, information technology/telecommunications, financial services)

Treatment of Built Environment: Explicit. The study measures how frequently organizations adopt "damage assessment" as a resilience mechanism.

Theory Engagement: *Extending.* The study extends existing resilience theories by examining multilevel influences on the adoption of resilience mechanisms.

Definition of Resilience/Recovery: The study defines organizational resilience as "the ability to survive a crisis and thrive in a world of uncertainty, which is a function of an organization's adaptive capacity and planning strategies," citing Lee et al. (2013) (p. 277).

Disruption Type: Natural hazard (Extreme weather event)

Methodology: This mixed-method, explanatory study utilizes a cross-sectional research design.

- Data were collected between 2017 and 2018. One inclusion criterion was that organizations must have experienced an extreme weather event between 2010 and 2017. However, the study does not specify when each organization experienced its disaster, so it is unclear whether responses reflect short-term impacts or long-term recovery processes.
- Data were collected through a semi-structured interview instrument that combined a structured survey questionnaire with open-ended prompts. The final sample included 61 organizations.
- Data were analyzed using descriptive statistics and regression analyses to test the influence of multilevel factors on mechanism adoption and adaptive resilience.

Recovery/Resilience Measurement: resilience was operationalized by two measures, the recovery period and the equilibrium state, approximations for the speed of recovery and quality:

1. Recovery period: the length of time that separates the occurrence of the extreme from the return to normalcy of business activities (measured as "(short, medium, long)").
2. Equilibrium state: the new level of activity reached by organizations in the long run (measured as "better, same, worse").

A related concept, resilience mechanism, was operationalized as the following actions (p. 281):

1. "Determining the scope of authority"
2. "Role assignment in the event of a crisis"
3. "Disposition and administration of resources"
4. "Self-organization"
5. "Establishment of crisis response team"
6. "Monitoring stress levels"
7. "Development of susceptibility awareness"
8. "Development of communication plan"
9. "Intra-organizational communication"
10. "Communication of information from the organization to the surrounding environment"
11. "Damage assessment"
12. "Learning by observation"
13. "Learning as a priority"
14. "Learning from the documentation"
15. "Knowledge acquisition by developing scenarios, plans, risk assessment"
16. "Review of previous events"
17. "Acquisition of information from the organization's surrounding environment"

Independent Variable(s): The main independent variables are grouped into four categories, reflecting the study's multilevel framework: Individual (e.g., age, education, crisis training, etc.), organizational (e.g., size, drills, plans, etc.), community (e.g., growth, population size), and extreme weather events (e.g., duration, prognosis capability, etc.).

Findings: The results reveal that resilience mechanisms are most often applied during and after extreme weather events, with fewer applied during the preparedness phase. The frequency and type of mechanisms used are influenced by individual, organizational, community, and event-related factors. An increase in the number of resilience mechanisms applied is positively associated with higher levels of resilience.

24) Kim JY, Kim JY (Jay), Miner AS (2009) Organizational learning from extreme performance experience: The impact of success and recovery experience. *Organization Science* 20(6):958–978.

Goals & Scope: The study seeks to understand how different types of performance extremes affect organizational learning and future survival among U.S. banks. Specifically, it investigates 1) whether episodes of unusually strong performance affect subsequent bank failure rates, and 2) how recovery from periods of financial distress relates to bank failure rates.

Ownership Structure/Sector: Private for-profit; finance

Treatment of Built Environment: None

Theory Engagement: *Developing.* The study develops and proposes a novel framework, distinguishing between success and recovery experiences as distinct forms of organizational learning associated with different survival outcomes.

Definition of Resilience/Recovery: Resilience was not directly defined, but was examined through an inverse construct, insolvency. Insolvency was defined as either bank liquidation or merger. Recovery was defined as an episode of extreme decline followed by significant improvement.

Disruption Type: Economic shock

Methodology: This quantitative, explanatory study utilizes a longitudinal research design (1984 to 1998).

- Recovery periods are described as a minimum of 2 quarters (6 months), corresponding to medium-term recovery dynamics.
- Data were obtained from secondary sources and contained information on financial and demographic bank data. In addition, bank performance data, used to measure recovery experience, was operationalized using Federal Deposit Insurance Company's Capital adequacy, Asset quality, Management, Earnings, and Liquidity (CAMEL) ratings data. The final sample included 1 532 organizations.
- Data were analyzed using survival analysis techniques (Cox proportional hazards models).

Recovery/Resilience Measurement: Recovery experience was operationalized as achieving a CAMEL rating of 125 or higher after two consecutive quarters with a CAMEL rating below 125.

The inverse construct of resilience, insolvency (bank failure), was operationalized in two ways:

1. Bank liquidation: any case in which a bank's charter was terminated due to insolvency.
2. Bank merger: any case in which a bank's charter was terminated because it was absorbed into another institution through merger or acquisition.

Independent Variable(s): The analysis included two key independent variables, success experience and recovery experience.

Findings: Results reveal that extreme performance experiences influence organizational learning and survival in distinct ways. Success experiences were associated with increased likelihood of failure, while recovery experiences reduced the likelihood of failure. Findings suggest that organizations can become overconfident and engage in risky behavior from success experiences and learn valuable adaptive lessons from overcoming near-crisis situations.

25) Lampel J, Bhalla A, Jha PP (2014) Does governance confer organisational resilience? Evidence from UK employee owned businesses. *European Management Journal* 32(1):66–72.

Goals & Scope: The study investigates whether and how employee ownership combined with employee involvement in governance enhances organization resilience. Specifically, it compares the performance of employee-owned businesses (EOBs) and non-EOBs before (2004 to 2008) and during (2008 to 2009) the global financial crisis. Additionally, the study identifies whether

governance arrangements tied to employee ownership support greater stability, long-term orientation, and adaptive capacity during economic crises.

Ownership Structure/Sector: Private for-profit; multi-sector (i.e., manufacturing and processing, technical services, professional services).

Treatment of Built Environment: None

Theory Engagement: *Testing.* The study tests resilience and governance theories in a novel context, specifically among EOBs and non-EOBs in the United Kingdom during the 2008 to 2009 financial crisis.

Definition of Resilience/Recovery: The study defines organizational resilience as the ability of the organization to “bounce back in the face of disturbance,” quoting Comfort, Boin, and Demchak (2010) (p. 67).

Disruption Type: Economic shock

Methodology: This explanatory, quantitative study utilizes a comparative research design.

- Secondary data on financial performance was combined with original data collected from structure survey questionnaires. The surveys were administered to a sample of 63 organizations in 2009.
- Data were analyzed using t-tests of mean differences.

Recovery/Resilience Measurement: Resilience is operationalized through organizational performance, consisting of multiple indicators comparing years 2005 to 2008 with 2008 to 2009:

1. Sales turnover
2. Increase in profits before interest and taxes (PBIT)
3. Increase in number of employees
4. Increase in sales turnover per employee
5. Increase in PBIT per employee

Independent Variable(s): Designation as an EOB was the sole independent variable in the analysis. It is a binary indicator reflecting the UK Employee Ownership Association’s criteria for employee ownership.

Findings: Results reveal that EOBs demonstrated greater resilience during the financial crisis compared to non-EOBs. EOBs were more likely to maintain employment levels, show stronger long-term orientation, and sustain financial performance despite challenging conditions. Results suggest employee ownership combined with participatory governance provides a stabilizing effect during periods of economic stress.

26) Lamorgese A, Patnaik M, Linarello A, Schivardi F (2024) Management practices and resilience to shocks: Evidence from COVID-19. *Management Science* 70(12):9058–9072.

Goals & Scope: This study investigates the role of structured management practices in responding to a large shock by Italian organizations. Structured management practices are defined as a set of management practices based on formalized procedures to set targets, monitor outcomes, and incentivize employees. Existing evidence suggests that these practices enhance organizational performance during routine times. The authors, however, highlight a gap, specifically, the lack of evidence confirming that these same practices support organizational performance during crisis time. These practices are designed to govern the organization's day-to-day operations, and as such are not designed to sense or address opportunities or threats; however, the authors argue that such practices (related to monitoring, targets, and incentives) may also provide organizations with tools and information that help with sensing and addressing opportunities or threats. In short, their goal is to determine whether structured management practices constitute an asset or liability when organizations are faced with large, disruptive events. Structured management practices, in the authors' view, constitute "better management", and their hypothesis is that better managed organizations are more ready to shift abruptly and substantially to remote work, a valuable capability that mitigated the impact of the COVID-19 pandemic.

Ownership Structure/Sector: Private for-profit; manufacturing and services

Treatment of Built Environment: None

Theory Engagement: *Testing:* They don't test a specific theory, but rather test previous, well-established findings in the literature that suggest in routine times, a link exists between structured management practices and organizational performance, but they extend it to crisis times. This adds to the body of literature on structured management practices (so management and organizational performance). They also test findings against what was found during the Great Financial Crisis of 2008, which was primarily a demand-driven disruption, whereas the COVID-19 pandemic initially started out as a supply-driven disruption.

Definition of Resilience/Recovery: This study does not define resilience or recovery.

Disruption Type: Pandemic

Methodology: Measures organizational performance (sales growth) in the pre- and post-event setting (two time periods conducting in 2019 and 2020) The 2020 period reflects immediately after the onset of the pandemic, so it would correspond to the crisis/response phase in the disaster management cycle and the ability of the organization to cope. There are three data sources, all secondary: 1) Survey of Industrial and Service Firms (INVIND) data, 2) the Special Survey on the Impact of the Coronavirus (ISECO) data, 3) the Business Outlook and Survey of Industrial and Service Firms (SONDTEL) data. The sample size is 1,535 organizations. The analytical approach is a difference-in-difference analysis with repeated cross sections.

Recovery/Resilience Measurement: The study authors track changes in sales growth before and after the pandemic onset between two groups: organizations with above mean sales growth and those with below. Sales growth is a proxy for organizational performance (and both expected and realized sales growth are dependent variables). It's operationalized as a percentage of 2019 expected and realized growth (e.g., -4.5%).

Independent Variable(s): The independent variable is the degree to which organizations adopt structured management practices (e.g., formalized procedures to set targets, monitoring of outcomes, employee performance incentives, and, more specifically related to the resilience to the pandemic, assigning workers clearly defined responsibilities, systematically keeping track of outcomes, and taking decisions based on the information collected). The study authors also add controls theorized to be correlated with the adoption of structured management practices and organizational performance. These include organizational size (number of employees), labor productivity (revenue per employee), whether or not the firm had positive exports, as well as if it recorded positive profits, average employee wage, share of white-collar workers, average human capital, manager human capital, and use of advanced technologies (e.g., cloud computing).

Findings: The study finds that organizations with better structured management practices (i.e., higher management score) were more likely to take action to address the challenges posed by the pandemic and were able to limit its negative effects. In short, structured management practices were in fact useful and effective for tackling a large, unanticipated shock above and beyond their efficacy for day-to-day operations of the organization. This was because the organizations with higher management scores were in a better position and more likely to implement more intense use of remote work, representing a comprehensive set of changes to organizational operations. The study authors conclude that despite being primarily designed for operations management, structured management practices also facilitate adaptation

27) L'Heureux D, Kapucu N, Ivanov D (2013) Interorganizational dynamics and characteristics of critical infrastructure networks. *Journal of Contingencies and Crisis Management* 21(4):207–224.

Goals & Scope: The study aims to identify and assess organizational characteristics that influence the resilience of 75 infrastructure providers in Montreal, Canada. The organizational characteristics are measured using existing proxies from Therrien (2010). The authors test differences in characteristics by organization sector (e.g., telecommunications, transportation, and energy sectors), type (e.g., government, community, private sector), and size (e.g., less than 20 employees, more than 500 employees, etc.).

Ownership Structure/Sector: Public and private; telecommunications, transportation, and energy

Treatment of Built Environment: Explicit (physical infrastructure and resources are considered in the analysis³)

Theory Engagement: *Extending.* The study extends Kervern's danger sciences model, combining with interorganizational network theory to explain variation in perceived resilience across organizational sectors, type, and size.

Definition of Resilience/Recovery: The study defines resilience as 'the capacity to cope with unanticipated dangers after they have become manifest, learning to bounce back', quoting Wildavsky, (1988, p. 77).

Disruption Type: Not specified (while the study alludes generally to "crisis periods," it does not anchor its analysis to a particular disruptive event or recovery process. Rather, the focus is on identifying and comparing resilience antecedents across different organizational types)

Methodology:

- This cross-sectional study drew on original survey data collected in 2010 from 405 organizations using a structured questionnaire.
- Data analysis employed statistical comparative methods, specifically Chi-square test and analysis of variance (ANOVA), to assess difference across organizational characteristics.

Recovery/Resilience Measurement: The authors do not directly measure resilience but instead measure 'organizational attributes' which they claim represent important capacities with the potential to influence resilience. All measures are subjective assessments made by participants representing organizational management roles and are described by the authors as 1-to-5 point Likert scale survey items (1 = total agreement to 5 = total disagreement). Measures are described and their values reported out only if they vary in statistically significant ways across organizational sector, type, and size. There are 25 measures representing resilient organizational attributes presented in the article (p. 217):

1. "Self-criticism (e.g., willingness of the organization to question its actions)"
2. "Transfer and acquisition of knowledge"
3. "Commitment to safety"
4. "Is your organization accredited by an external body in charge of safety?"
5. "Do other safety rules apply to your organization?"
6. "Adaptability favours the application of rules in my organization"
7. "My organization gathers information on the state of the organization's infrastructures (e.g., physical, technological, information structures) that were updated in the past year"
8. "My organization benefits from sound finances and budget"

³ Three Likert scale items may relate to the physical, built environment: 1) "My organization gathers information on the state of the organization's infrastructures (e.g., physical, technological, information structures) that were updated in the past year"; 2) "My organization benefits from sufficient resources (e.g., human, information, physical)"; 3) "My organization favours redundancy of tasks, databases, backups, etc."

9. "My organization benefits from liquid assets or a budget that can be accessed quickly in case of difficulty"
10. "My organization benefits from sufficient resources (e.g., human, information, physical)"
11. "My organization favours dissemination of information within the organization"
12. "My organization favours sharing of knowledge about tasks: employees know the tasks their colleagues perform and can carry them out if necessary"
13. "My organization favours feedback"
14. "My organization favours communication centered on problem solving"
15. "My organization favours decision making structure where different units and divisions of the organization can ask questions and dialogue on technologies being used, work procedures and rules in force"
16. "My organization favours redundancy of tasks, databases, backups, etc."
17. "Has your organization undergone audits or assessments that led to recommendations related to risk or crisis management in the past year? [Yes, internally; Yes, in collaboration with partners (common assessment); No; Don't know]"
18. "Degree of impact of past crisis"
19. "Is your organization involved with other organizations in a joint action plan covering either risk or crisis management? [Yes, on the strategic and operational levels; Yes, on the strategic level; Yes, on the operational level; No; Don't know]"
20. "Overall, I am satisfied with this organization and its personnel (as perceived by external partners)"
21. "One of the advantages of this relation is that it increases my organization's expertise (e.g., best practices, know-how, experience)"
22. "Overall, we mutually agree on the objectives of this relation and the importance of maintaining it"
23. "The presence of laws or formal rules makes this relation necessary or desirable"
24. "The fear of sanctions makes this relation necessary or desirable (e.g. economic, threats of legislation)"
25. "The complexity of our tasks or mission makes this relation necessary or desirable"

Independent Variable(s): The independent variables are organizational sector, type, and size.

Findings: Results reveal that private organizations generally report stronger formal safety mechanisms, better resource conditions, and more active communication and learning practices relative to public organizations. Public organizations have more legally binding or compulsory relationships that characterize their organizational networks and may be more influenced by normative and informal pressures rather than economic incentives.

The relationship between size and many resilient organizational attributes is non-linear. For example, mid-sized organizations (undefined) sometimes outperform the smallest and largest organizations in terms of commitment to safety and risk awareness. However, very small and very large organizations enjoy a higher reputation with external partners. Smaller organizations tend to struggle more with knowledge sharing and adaptability.

The telecommunications organizations show greater openness to questioning procedures, however, they face more goal misalignment and power imbalances in partnerships. Transportation organizations score high in monitoring capacity.

28) Li Y, Chen H, Wei L, Wei L (2024) Open innovation, organizational resilience, and the growth of SMEs in crisis situations. *IEEE Transactions on Engineering Management* 71:11009–11023.

Goals & Scope: The study examines how inbound (IOI) and outbound innovation (OOI) strategies affect the growth performance of small- and medium-sized enterprises during the COVID-19 pandemic in Guangdong, China. The authors aim to identify the mechanisms, costs, benefits, and boundaries under which inbound innovation strategies impact growth performance within the context of the COVID-19 pandemic. Although the authors evaluate organizational resilience as a dynamic capability that transmits the value of open innovation to market success, it serves as a sub-focus and a mediating mechanism rather than the study's primary focus.

Ownership Structure/Sector: Private for-profit; information technology, biomedicine, manufacturing

Treatment of Built Environment: None

Theory Engagement: *Extending.* The study extends existing theory by adapting Resource Orchestration Theory and Transaction Cost Theory to the context of sudden external shocks. The authors expand this framework by treating open innovation as a “resource orchestration behavior” and organizational resilience as a “dynamic capability”. By integrating these perspectives, they construct a new “open innovation, organizational resilience, and growth performance” analysis framework to explain how firms navigate challenges and successful growth under disruptive external shocks. This adds a new dimension to the literature by demonstrating how transaction costs and benefits of resource exchanges shift during a major crisis.

Definition of Resilience/Recovery: The authors define organizational resilience as the organization’s “ability to predict potential threats, effectively respond to adverse events, and adapt to environmental changes, which enables [organizations] to withstand stress, constantly innovate, and promptly adapt to changes” (p. 11013).

Disruption Type: Pandemic.

Methodology: The study utilized original data collected through a cross-sectional study design. A survey questionnaire was administered to 201 organizations located within the Guangdong Science and Technology Enterprise Incubator Park in China (the timing of administration was not disclosed by the authors). The authors employed several statistical techniques, including confirmatory factor analysis and regression analysis, to evaluate mediating and moderating effects.

Recovery/Resilience Measurement: The study authors operationalize resilience using nine Likert scale items; however, they disclose only one (p. 11015): “Faced with the COVID-19 pandemic, our company is successful in acting as a whole with all of its employees.”

Independent Variable(s): The independent variables used in the study included inbound open innovation and outbound open innovation (organizational resilience is treated as a mediating variable). Control variables included organizational age, size, industry, the previous year’s operating revenue, and whether there is overseas business.

Findings: The study demonstrates that external collaboration acts as a change agent for SMEs navigating major market crises, though this depends on the direction of knowledge flow. While outbound innovation (e.g., sharing internal ideas with the broader market) provides a steady boost to firm growth, inbound innovation (e.g., absorbing external expertise) follows a U-shaped trajectory, meaning organizations must overcome initial integration challenges before realizing benefits. More importantly, using both innovation strategies was found to have produced a synergistic effect that reinforced organizations’ resilience.

29) Liu W, Choi TM, Niu X, Zhang M, Fan W (2022) Determinants of business resilience in the restaurant industry during the COVID-19 pandemic: A textual analytics study on an O2O platform case. *IEEE Transactions on Engineering Management* 71:10427–10440.

Goals & Scope: The aim of this study is to explore the determinants of resilience in restaurants impacted by the COVID-19 pandemic, considering the specific role of digital platforms in shaping resilience, and quantify the impact of the pandemic on restaurant performance. Data on Chinese restaurants were collected from Dianping.com, an online-to-offline (O2O) web platform.

Ownership Structure/Sector: Private for-profit; retail and hospitality

Treatment of Built Environment: *Explicit.* The built environment is treated as organizational capital, expressed in two ways: 1) physical capital, encompassing on-site service systems (e.g., physical amenities such as space, décor, building layout), as well as contactless service systems (e.g., online food ordering platforms, digital payment systems, takeout and delivery infrastructure); 2) natural capital, expressed as *location* and indicating close proximity to transportation access, commercial retail, environment, etc.

Theory Engagement: *Extending.* While this study draws on established concepts, such as those found in the Resource-Based View (RBV), which views resilience as a function of an organization’s assets, it is best classified as *extending*. The authors go beyond *testing* a theory in a new context. They modify the original integrative framework by adding and refining specific dimensions tailored to the restaurant industry during a pandemic. Specifically, they propose a research model where four types of capital (economic, social, physical, and natural) serve as moderating constructs, and apply it to Chinese restaurants using an uncommon data source: a leading online-to-offline (O2O) platform provides online customer reviews, among other data,

which the study authors use to construct an indicator of social capital and perceived risk, as well as sales revenue.

Definition of Resilience/Recovery: Organizational resilience is defined as “dynamic organizational capabilities used for adapting to new environmental conditions under extreme events” (p. 10429).

Disruption Type: Pandemic

Methodology: The study utilizes a monthly longitudinal panel design spanning 17 months (January 2019 through May 2020), corresponding to before and during the pandemic. Original data was collected via web-crawling from Dianping.com, a leading O2O platform in China that provides structured restaurant features and unstructured customer reviews. The sample size of the final data set is 2,048 restaurants. For the analysis, the authors used a text-mining tool (Latent Dirichlet Allocation) and regression analysis (negative binomial fixed-effects panel model).

Recovery/Resilience Measurement: The study's dependent variable is organizational performance, operationalized as the count of online reviews, which serves as a proxy for product sales. They cite previous empirical work establishing a positive relationship between the number of online reviews and organizational performance.

Independent Variable(s): The independent variables include the hazard event (binary), social capital (customer rating), physical capital (e.g., on-site service, contactless service), economic capital (chain operation), and natural capital (location).

Findings: The study found that the pandemic reduced otherwise normal restaurant performance by about 60%. Social capital (high ratings) and natural capital (prime locations) positively moderated the performance shock, while physical capital, through contactless service specifically, was a critical resilience determinant, especially among full-service restaurants. Somewhat surprisingly, chain operations enhanced the resilience of quick-service restaurants but failed to mitigate the shock for full-service restaurants, due to the high fixed costs associated with maintaining large properties and workforces.

30) Matysek-Jędrych A, Mroczek-Dąbrowska K, Kania A (2022) Beyond the COVID-19 pandemic: What builds organizational resilience capacity? *International Journal of Emerging Markets* 19(10):3272–3302.

Goals & Scope: The study aims to identify key sources contributing to organizational resilience in the context of disruptive events like the COVID-19 pandemic. The study examines how different factors, such as financial resources, digitization level, and supply chain collaboration, interact to enhance resilience. The scope includes developing and testing a model to evaluate the relative contribution of these factors to resilience, using survey data collected from organizations across various sectors.

Ownership Structure/Sector: Public and private

Treatment of Built Environment: None

Theory Engagement: *Developing.* The study develops a conceptual model of organizational resilience sources and characteristics. This model synthesizes insights from three streams of literature: resource-based view (RBV) of resilience, resource dependency theory (RDT), and supply chain resilience. Combined with input from subject matter experts, the study generated an initial list of potential resilience factors, subsequently refined to a subset through Pareto analysis.

Definition of Resilience/Recovery: The study defines organizational resilience as the “capability to survive, adapt and grow in a dynamic and uncertain environment”, quoting Rai et al. (2021, p. 12010) (p. 4).

Disruption Type: Pandemic

Methodology: This quantitative study follows an explanatory research design.

- The article does not specify when data collection occurred.
- The study employs a cross-sectional design, analyzing data from 40 participants obtained through a structured survey. The article does not include the survey instrument or example survey questions.
- The study uses integrated Pareto analysis, grey theory, and Total Interpretive Structural Modeling (TISM) to examine the determinants of organizational resilience. The Pareto analysis allows determination of which factors had the strongest impact, by ranking them according to their cumulative influence on organizational resilience. Grey theory allows an analysis despite incomplete or limited data, while TISM maps how key drivers influence one another in a step-by-step causal chain.

Recovery/Resilience Measurement: This study does not present a single composite “resilience score,” rather the study operationalizes resilience by examining potential sources of organizational resilience. Resilience capacity is conceptualized as a hierarchical, networked system of sources of resilience capacity, not as a dependent variable. The study measures how strongly each source contributes to resilience and how they interact. The study identifies 12 potential sources of organizational resilience. All measures are subjective assessments in the form of five- and seven-point Likert scales.

1. Access to financial resources, operationalized as a firm’s access to liquidity (ability to raise cash when needed);
2. Access to human capital, described as access to experienced human capital and know-how (especially among management);
3. Digitization level, described as incorporation of digital technologies into business processes, including supply chain management;
4. Supply chain collaboration, described as degree of co-dependence between the firm [organization] and the value creation process;

5. Organization size, operationalized as employee turnover and number of employees;
6. Ownership structure, operationalized as origin of capital (private or state owned);
7. Corporate affiliation, described as affiliation to corporate groups;
8. Supply chain responsiveness, described as the ability to effectively and efficiently address the market requirements maintaining reliability and reputability of an organization;
9. Supply chain redundancy, described as the degree of dependence and level of switching costs associated with company's existing suppliers' portfolio;
10. Clients' portfolio redundancy, described as the degree of dependence and level of switching costs associated with company's existing customer portfolio;
11. Supply chain flexibility, described as the ability of company to alter processes, resource allocation, structure and governance mechanisms as a response to market changes, production volume or product variability;
12. Innovativeness, described as the company's ability to offer new products/services to the existing customers

Independent Variable(s): None. The study applies Pareto analysis, grey theory, and TISM to identify and structure the interdependencies among multiple sources of resilience capacity.

Findings: This study identifies three key drivers of organizational resilience: access to financial resources, digitization level, and supply chain collaboration. Further, the study concludes that resilience cannot be viewed as a feature but rather as a 'dynamic intertwined network of different co-dependent sources' (p. 1). This means that organizations seeking to enhance their resilience should adopt integrated strategies rather than focus on a single factor in isolation, as benefits are amplified through interaction effects between resilience factors.

31) Melián-Alzola L, Fernández-Monroy M, Hidalgo-Peñate M (2020) Hotels in contexts of uncertainty: Measuring organisational resilience. *Tourism Management Perspectives* 36:100747.

Goals & Scope: The study proposes a model for measuring organizational resilience in the hotel sector by identifying and quantifying key dimensions of resilience. It tests a three-part model: It first identifies a set of predictors of resilience, then tests them against hotel resilience, and then tests hotel resilience as a predictor of hotel performance. The analysis is not anchored in a particular hazard or disruptive event but is framed within the context of the COVID-19 pandemic. The study is meant to be applicable to any type of environmental change, broadly defined, that could threaten the continuity of organizational functioning, including any source of uncertainty or turbulence, such as pandemics or sudden demand fluctuations.

Ownership Structure/Sector: Private for-profit; tourism

Treatment of Built Environment: None

Theory Engagement: *Developing*. Rather than test a single, codified theory, this study constructs a conceptual model of organizational resilience that synthesizes multiple theoretical

perspectives, including dynamic capabilities, organizational adaptation, and resilience as process and outcome.

Definition of Resilience/Recovery: The authors conceptualize resilience as both a process (i.e., predictors: strategy and change) and an outcome (i.e., hotel resilience and its impact on performance). Because of this, they reference multiple definitions of resilience. The operational definition they provide is “the degree of operational and strategic organizational adaptation to new environmental conditions, reaching a new equilibrium point at which organizations emerge strengthened.” (p. 7).

Disruption Type: Not specified (any source of uncertainty or turbulence, such as pandemics or sudden demand fluctuations)

Methodology: This two-phased analysis begins with organizational resilience as the dependent variable in which the study identifies the principal predictors associated with increased resilience. In the second and sub phase, resilience is treated as an independent variable and predictor of hotel performance.

- Sample of 72 hotels. Respondents were hotel managers of four- and five-star hotels, which, based on prior literature, tend to have higher preparedness. The instrument was a structured survey.
- The authors analyzed data using Partial Least Squares (PLS) path modeling to test relationships among resilience predictors, hotel resilience, and hotel performance. They assessed explained variance, effect sizes, and the overall fit of their proposed model.

Recovery/Resilience Measurement: The metric of hotel resilience consists of three items, measured on a seven-point Likert scale (1 = strongly disagree to 7 = strongly agree):

1. “In the face of change, my hotel achieves a new organizational equilibrium by adapting to changes in the environment (offering new products or services, incorporating new technologies, negotiating with tour operators...).”
2. “In the face of change, my hotel recovers and strengthens at a strategic and operational level (recovering the hotel occupancy rate, improving its competitive position...).”
3. “In the face of change, my hotel adapts strategically and operationally to new environmental conditions.”

Independent Variable(s): These are in the first phase of the analysis, in which the study identifies predictors of resilience. Resilience predictors tested are strategy and change. *Strategy* captures a hotel’s proactive behaviors for anticipating and managing change (e.g., continuous strategic planning, environmental scanning, organizational learning, promoting employee participation, stakeholder collaborations). *Change* captures the organization’s commitment to improvement through innovation, quality management, organizational learning, and problem-solving.

Findings: Results reveal that both strategy and change are significant predictors of hotel resilience. Strategy has the strongest effect, while change showed a medium effect. This means

that when organizations engage in strategic planning and encourage a culture of innovation and change management, they become more resilient.

- 32) Montera R, Haylemariam LG, Cucari N (2025) Continuous improvement and organizational resilience: The role of digital maturity in small and medium-sized enterprises. In: Schiavone F, Omrani N, Gabteni H (eds) *Advanced perspectives and trends in digital transformation of firms, networks, and society*. Springer, Cham, pp 487–501.

Goals & Scope: The study authors aim to explore the relationship between continuous improvement practices and organizational resilience by analyzing if and to what extent the digital maturity of small and medium-sized enterprises (SMEs) moderates this connection. The hazard is treated as context (a single timepoint or wave of data collection is considered and analyzed – so no before and after) and they include the pandemic, the Russian invasion of Ukraine and resurgent inflation.

Ownership Structure/Sector: Private for-profit; manufacturing.

Treatment of Built Environment: None

Theory Engagement: *Developing*. The study proposes a novel theory in which organizational resilience is conceptualized as a meta-capability composed of cognitive and behavioral dimensions. Digital maturity is conceptualized as a moderating variable that determines whether continuous improvement practices facilitate proactive or reactive resilience.

Definition of Resilience/Recovery: The study defines organizational resilience as “the ability to recover from disruption quickly and effectively” (p. 488).

Disruption Type: Pandemic

Methodology: The study analyzes Italian firms that were active from 2002 through 2023, with primary web survey data collected between June and December 2023. One wave of data is collected, reflecting a single point in time (during the crisis). The sample frame was constructed from the commercially available Analisi Informatizzata Delle Aziende (AIDA) Bureau van Dijk database, from which a sample of 133 organizations was surveyed using a web-based questionnaire. The authors utilized moderated hierarchical regression to test how digital maturity moderates the connection between continuous improvement practices and organizational resilience.

Recovery/Resilience Measurement: The study operationalized resilience by first deconstructing it into two main types, proactive and reactive organizational resilience. Each resilience type was based on responses to either four or five 5-point Likert survey items, with scales ranging from (1) strongly disagree to (5) strongly agree (p. 493):

1. Proactive resilience:
 - a. “We created internal awareness for disruptions and made attempts to drive this awareness to our employees.”

- b. “We analyzed and assessed both probability and impact of potential disruptions.”
 - c. “We improved our disruption prevention capabilities.”
 - d. “We engaged in contingency planning to prepare for potential disruptions.”
2. Reactive resilience:
- a. “We can quickly recognize that there is a threatening situation.”
 - b. “We can gather and interpret information of cues to gauge the magnitude, location, and causes of the disruption.”
 - c. “We can quickly identify, formulate, and evaluate a set of possible responses to disruption.”
 - d. “We can quickly organize a formal response team of key personnel, both on-site and at corporate level.”
 - e. “We are very successful at dealing with crises, including addressing public relations issues.”

Independent Variable(s): The primary independent variable is digital maturity (e.g., use of digital technology, automation of core processes, etc.). Control variables include organizational size and transformation management intensity (e.g., resource sharing, encouraging an organizational vision and culture, etc.)

Findings: Study findings suggest that digital maturity acts as a moderating variable, determining how continuous improvement practices translate into different forms of organizational resilience. Specifically, reactive resilience (responding and recovering from disruptions) is driven by people (skills, training) and strategy (project prioritization). This relationship is enhanced by digital intensity, which shortens response time during crises. Conversely, culture and top management practices drive proactive resilience (anticipating disruptions before they occur), moderated by transformational management intensity. Organizational size was found to have a positive and significant effect on reactive organizational resilience only. On this last point, the study authors conclude that having more employees can improve the speed and flexibility of an organization’s response to a crisis.

33) Núñez-Ríos JE, Sánchez-García JY, Soto-Pérez M, Olivares-Benitez E, Rojas OG (2022) Components to foster organizational resilience in tourism SMEs. *Business Process Management Journal* 28(1):208–235.

Goals & Scope: The study proposes a conceptual model for evaluating the relationships among organizational resilience factors. It examines how internal factors, such as management style and people development, as well as structural/network elements contribute to building organizational resilience among tourism small- and medium-sized enterprises (SMEs).

Ownership Structure/Sector: Private for-profit; tourism

Treatment of Built Environment: None

Theory Engagement: *Extending.* Drawing on Hillman (2021), the authors extend the application of social capital theory by integrating it with systems thinking.

Definition of Resilience/Recovery: The study defines organizational resilience as “the state resulting from the harmonious integration and regulation of basic operative units, with sufficient autonomy to utilize structural, relational and environmental components, in order to maintain an organization’s existence despite the conditions and disruptions” (p. 210).

Disruption Type: Not applicable

Methodology:

- The study surveyed 150 SME owners and managers using a structured questionnaire on organizational resilience, complemented by items assessing learning capabilities, management style, and people development. All measures employed five-point Likert scales (1 = total disagreement to 5 = full agreement).
- The authors analyzed data using social network analysis (SNA) to conceptualize and visualize the relationship among resilience factors. They then use Partial Least Squares Path Modeling (PLS-PM) to test the hypothesized relationships statistically, assessing the strength and significance of paths between resilience predictors and organizational resilience.

Recovery/Resilience Measurement: Organizational resilience was operationalized via three five-point Likert scale measures (1 = total disagreement to 5 = full agreement) (Table 2, p. 215):

1. OR1: The organization runs information from both the environment and key actors and distributes it, appropriately strengthening management and operations
2. OR2: The organization has strong internal and external social connections considering an ethical framework
3. OR3: Appropriate use of resources, capabilities and relationships are made to amplify good results

Independent Variable(s): A total of 4 constructs were tested (see Table 2, p. 2015) for a detailed description of how each construct was operationalized): Innovation (Inv), Learning capabilities (LeC), Management style (MaS), and People development (PeD).

Findings: The study finds that organizational resilience is fostered through both internal management practices and external networks. Management style and people development are central drivers, while connections with other organizations strengthen resilience capacities. Innovation does not result directly from learning capacity or management style alone, but when coupled with people development, these factors reinforce innovation, which in turn support resilience.

34) Orth D, Schuldis PM (2021) Organizational learning and unlearning capabilities for resilience during COVID-19. *The Learning Organization* 28(6):509–522.

Goals & Scope: This study examines the effect of organizational learning on resilience and investigates how unlearning contributes to resilience in the context of the COVID-19 pandemic. Using survey data, the authors analyze how learning and unlearning capabilities shape adaptive capacity as a core dimension of resilience.

Ownership Structure/Sector: Private for-profit; multi-sector

Treatment of Built Environment: None

Theory Engagement: *Extending.* The authors extend theory by combining multiple conceptual frameworks, including resilience as a process of anticipation, coping, and adaptation (Duchek 2019), resilience as a capability (Stephenson 2010), and organizational unlearning (Fiol and O'Connor 2017). Organizational learning as “a system’s process of managing its experience. Information enters an organization, is altered and potentially stored in routines or behaviors (Wand and Ahmed 2023, Tsang and Zahra 2008)” (p. 510), while unlearning is defined as the “process of intentionally discarding routines based on mental models (Fiol and O'Connor 2017, Klammer and Gueldernberg 2019, Tsang and Zahra 2008)” (p. 510). These definitions inform the study’s measurement approach, adapted from Jerez-Gomez et al. (2005).

Definition of Resilience/Recovery: The study defines organizational resilience as the “ability to anticipate and absorb external disruptions, learn from them and adapt for future challenges, while still pursuing their core objectives” (Barasa et al. 2018, Witmer 2019).

Disruption Type: Pandemic

Methodology: This quantitative study utilizes an explanatory research design:

- The study collected data via a structured survey questionnaire which included survey items relating to basic demographic information, learning, unlearning, and organizational resilience. 244 respondents participated in the survey.
- The study analyzed data using moderation modeling (Hayes 2017) to test whether unlearning capability strengthens the relationship between learning capability and organizational resilience. Moderation analysis is a type of regression analysis in which an interaction term is included in a multiple regression to test whether the relationship between an independent variable (e.g., learning) and a dependent variable (e.g., resilience) changes depending on the level of a third variable (the moderator, e.g., unlearning).

Recovery/Resilience Measurement: Resilience is measured using a validated multi-item seven-point Likert scale (1 = strongly disagree to 7 = strongly agree). It is composed of two dimensions (planning, adaptive capacity) and measured using eight metrics (three for planning, five for adaptive capacity) (p. 514):

1. “(P1) We believe emergency plans must be practised and tested to be effective”
2. “(P2) In the past, we built relationships with companies or institutions we currently work more closely within this crisis”

3. “(P3) Our priorities for recovery (would) provide direction for staff in this crisis”
4. “(AC1) There is a sense of teamwork and camaraderie in our company (organization)”
5. “(AC2) Employees (staff) have the information and knowledge they need to respond to unexpected problems”
6. “(AC3) Managers in our company (organization) lead by example”
7. “(AC4) Employees (staff) are rewarded for ‘thinking outside the box’”
8. “(AC5) Managers actively listen for problems”

Independent Variable(s): These include learning (managerial commitment, systems perspective, openness and experimentation, knowledge transfer and integration) and unlearning (ostensive and performative). Table 1 (p. 514) for a detailed description of metrics used.

Findings: The study finds that organizational learning has a positive effect on organizational resilience. Further, unlearning is found to not have a moderating effect on this relationship as initially hypothesized. Organizational learning was found to have a particularly strong positive influence on adaptive capacity, a dimension of resilience, compared to organizational resilience overall. Organizations that effectively take in feedback, reflect on experiences, and adapt accordingly are better positioned to withstand and recover from crises.

35) Ortiz-de-Mandojana N, Bansal P (2016) The long-term benefits of organizational resilience through sustainable business practices. *Strategic Management Journal* 37(8):1615–1631.

Goals & Scope: The study investigates whether organizational resilience provides long-term benefits to organizations. Specifically, it tests whether organizations that invest in socially and environmentally responsible practices (SEPs) are more resilient to shocks and whether this resilience leads to superior long-term financial performance. The analysis focuses on how resilience enables firms to withstand, adapt to, and recover from disruptions, thereby enhancing sustained competitive advantage.

Ownership Structure/Sector: Private for-profit; multi-sector

Treatment of Built Environment: None

Theory Engagement: *Extending.* The analysis is grounded in the resource-based view (RBV) and extended with concepts from organizational resilience. The authors conceptualize organizational resilience as comprising two capabilities: 1) quickly processing and responding to environmental signals (Sutcliffe and Vogus 2003), and 2) developing flexible resources that can be applied to a wide range of interchangeable alternatives (Sanchez 1995) (p. 1617). Social and environmental practices (SEPs) are defined as organizational practices that have a positive effect on society by improving the firm’s impact on the social and natural environment, and can include community relations, diversity, employee relations, human rights, product quality and safety, and environment and corporate government practices (p. 1616).

Definition of Resilience/Recovery: The study defines organizational resilience as “the incremental capacity of an organization to anticipate and adjust to the environment” (p. 1617).

Disruption Type: Economic shock

Methodology: The research design is a longitudinal, quantitative study using secondary data from a large sample of U.S. private, for-profit organizations.

- The study compiled a combined dataset spanning 15 years (1994 to 2008) of social and environmental practices of organizations, with financial and survival outcome data.
- The study utilizes longitudinal regression analyses to test the relationship between SEPs and resilience. They estimate models linking SEPs to two dependent variables, firm survival (measured as organizational longevity) and long-term financial performance. The analysis uses panel data methods to capture variation across organizations and over time, allowing them to identify the effects of SEPs on resilience (e.g., repeated-measures ANOVA and survival analysis).

Recovery/Resilience Measurement: Resilience is operationalized through two complementary outcomes, organizational survival and long-term financial performance. Survival is measured as whether the firm remained active (e.g., did not exit through bankruptcy, closure, or acquisition) over the study period. Financial performance is measured using accounting and market-based indicators to assess whether firms sustained competitive advantage over time (e.g., Tobin’s Q, stock market valuation, net sales growth).

Independent Variable(s): The central independent variable is a measure of SEPs. The study operationalizes SEPs using data on community relations, diversity, employee relations, human rights, product quality and safety, and environment and corporate government practices (p. 1621). Specifically, they use an existing external index, the Kinder, Lydenberg, Domini database of social and environmental indicators (KLD), to classify firms into treatment and control groups based on their KLD score. Those with high KLD scores are considered to engage in high levels of SEPs, while those with low or no score form the comparison group.

Findings: The study finds that firms engaging in high levels of SEPs exhibit greater resilience. Results suggest that SEPs foster flexible resources such as reputation, stakeholder trust, and employee commitment, which enhance the ability to adapt to disruptions and sustain competitive advantage over time.

36) Ozanne LK, Chowdhury M, Prayag G, Mollenkopf DA (2022) SMEs navigating COVID-19: The influence of social capital and dynamic capabilities on organizational resilience. *Industrial Marketing Management* 104:116–135.

Goals & Scope: The goal of the study is to understand how social capital facilitates resilience for organizations. Specifically, the study examines how social capital fosters organizational resilience, focusing on the mediating role of dynamic capabilities in this relationship. Using

original survey data, the authors test constructs including internal social capital, customer-focused external social capital, dynamic capabilities and organizational resilience.

Ownership Structure/Sector: Private for-profit; multi-sector

Treatment of Built Environment: None

Theory Engagement: *Extending.* The study integrates perspectives from Social Capital Theory (Aldrich 2012, Chowdhury et al. 2019) and dynamic capabilities literature to build a conceptual model of organizational resilience. Social capital is theorized as a critical resource base, while dynamic capabilities (sensing, seizing, and reconfiguring) are hypothesized to act as the mechanism transforming social capital resources into resilience. The study distinguishes internal from external social capital, and further identifies dimensions of both (e.g., structural, relational, and cognitive).

Definition of Resilience/Recovery: The study defines organizational resilience as “an organization’s ability not only to develop preventative capacity to face any unexpected disruptions but also take the necessary and quick actions to respond and recover from that disruption to ensure business continuity,” quoting Jia et al. (2020, p. 10164).

Disruption Type: Pandemic

Methodology: This quantitative study follows an explanatory research design.

- Data collection occurred during the pandemic.
- Data were collected via a cross-sectional survey of 419 organizations.
- Data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM).

Recovery/Resilience Measurement: Resilience is operationalized as having three dimensions, readiness, response, and recovery. Readiness is defined as preparedness and anticipation of change, response as capacity to react effectively when disruptions occur, and recovery as ability to return to stable functioning post-disruption. All items were assessed using seven-point Likert scales, where higher scores indicate stronger resilience capabilities. The article does not include the specific text of the Likert-scale items used to operationalize resilience.

Independent Variable(s): Independent variables are measured using seven-point Likert scale survey items, ranging from 1 (strongly disagree) to 7 (strongly agree). The article does not include the specific text of the Likert-scale items used to operationalize social capital and dynamic capabilities. Independent variables are categorized into one of the following groups (see sources of measures p. 120, Table 1):

- External social capital constructs are measured using three metrics, reflecting structural, relational, and cognitive dimensions of social capital.
- Internal social capital constructs are measured using three metrics, reflecting structural, relational, and cognitive dimensions of social capital.
- Dynamic capabilities constructs, include sensing, seizing, and reconfiguring.

Findings: Findings show that social capital enhances resilience only when mediated by dynamic capabilities. Internal social capital and external customer relationships provide potential resilience resources, but organizations strengthen resilience when they actively mobilize and reconfigure these relationships through adaptive managerial practices.

37) Robertson J, Botha E, Walker B, Wordsworth R, Balzarova M (2022) Fortune favours the digitally mature: The impact of digital maturity on the organisational resilience of SME retailers during COVID-19. *International Journal of Retail & Distribution Management* 50(8/9):1182–1204.

Goals & Scope: This mixed-methods study investigates the role of digital maturity in fostering organizational resilience among SMEs in the context of the COVID-19 pandemic. They compare digitally mature against less mature SMEs in retail and explore how digital maturity shaped organizational responses to the COVID-19 pandemic, using both survey and interview data.

Ownership Structure/Sector: Private for-profit; retail

Treatment of Built Environment: None

Theory Engagement: *Extending.* The study integrates two conceptual frameworks (digital maturity and organizational resilience), thus extending organizational resilience theory to include digital maturity. It frames digital maturity as a resilience antecedent. It defines digital maturity as “a capability that enables an organization to align its ‘people, culture, structure and tasks to compete effectively by taking advantage of opportunities enabled by technological infrastructure,’” quoting Westerman et al. (2012, 2014).

Definition of Resilience/Recovery: The study defines resilience as “a function of an organization’s overall situational awareness, management of keystone vulnerabilities and adaptive capacity in a complex, dynamic and interconnected environment,” quoting McManus (2008, p. 82).

Disruption Type: Pandemic

Methodology: The study uses multiphase, mixed-methods research design to compare and explain how digital maturity supports resilience, combining statistical analysis of group differences with qualitative insights.

- Data were collected in 2020 using survey instruments and semi-structured qualitative interviews. The final sample included 79 participating organizations.
- The data were analyzed using independent sample t-tests and thematic analysis to compare differences between digitally mature and less mature organizations.

Recovery/Resilience Measurement: The study draws on Lee et al. (2013) and McManus (2008) to operationalize resilience. All measures are on a four-point Likert scale. Three dimensions of resilience were measured using multiple measures each (the article does not disclose the specific text of the Likert-scale items used), operationalized as:

1. Mindfulness/Situational awareness: recovery priorities; situation monitoring and reporting
2. Management of keystone vulnerabilities: planning strategies, practiced response, internal resources, external resources, staff engagement and involvement
3. Adaptive capacity: minimization of silos; information and knowledge; leadership, management and governance structures; innovation and creativity; devolved and responsive decision-making.

Independent Variable(s): Digital maturity was measured using 10 items representing digital leadership, drawing on the work of Westerman et al.'s (2014). The article does not include the specific text of the seven-point Likert-scale items used to operationalize digital maturity.

Findings: The authors find that digitally mature organizations were more resilient relative to less mature organizations, and that digitally mature organizations performed better across all three resilience dimensions (situational awareness, management of keystone vulnerabilities, adaptive capacity). Digitally mature organizations performed better in terms of adaptive capacity, especially innovation and creativity, as well as responsive decision-making. Qualitative findings reveal digitally mature organizations responded to the COVID-19 pandemic with optimism, clear strategies, and digital innovation relative to less mature organizations.

38) Searing EAM (2018) Determinants of the recovery of financially distressed nonprofits.
Nonprofit Management and Leadership 28(3):313–328.

Goals & Scope: The study examines how financially distressed nonprofit organizations recover. It examines if drivers of recovery vary depending on the types of financial distress experienced (i.e., insolvency and financial disruption), and assesses whether commonly recommended tactics (e.g., prioritizing equity balances, surplus margins, diversified revenues, etc.) facilitate recovery.

Ownership Structure/Sector: Public non-profit; multi-sector

Treatment of Built Environment: None

Theory Engagement: *Extending.* The study extends existing organizational ecology concepts (liabilities of newness and smallness) by testing these empirically under two definitions of vulnerability (insolvency and financial disruption). It reframes vulnerability indicators as recovery levers and distinguishes between types of financial stressor.

Definition of Resilience/Recovery: Recovery is defined in terms of financial performance, that is, assets equal or exceed liabilities or the organization experiences net-asset growth or minimal losses.

Disruption Type: Economic shock

Methodology: This quantitative study follows an explanatory research design.

- The study utilizes longitudinal, secondary panel data over a 22-year period (1990-2012). Recovery is operationalized as 1- and 2-year post-event, aligned with long-term recovery dynamics.
- Secondary data are sourced from National Center for Charitable Statistics Core files generated from Internal Review Service Form 990 filings (no primary data were collected).
- Data were analyzed using logistic regression.

Recovery/Resilience Measurement: The study observes a four-year period in which a financial distress event occurs in either year 1 or year 2. If the organization experiences either net asset growth or a net asset loss of less than 25 % in years 3 and 4, they are considered to have recovered.

Independent Variable(s): The study tests the relationship between recovery and equity balances, surplus margins, revenue concentration/diversity, size, and age.

Findings: The study demonstrates five main findings: 1) higher equity strongly predicts recovery across both samples (defined by financial distress type); 2) surplus margin negatively impacts recovery for insolvent organizations, but helps those experience financial disruption; 3) more diversified (less concentrated) revenues increase odds of recovery; 4) smaller and younger organizations are not recovery disadvantaged; 5) fewer insolvent organizations recovered relative to financially disrupted organizations.

39) Shao M, An L (2022) Contradiction or consistency: The “double-edged sword” effect of asset specificity on organizational resilience. *IEEE Transactions on Engineering Management* 71:1900–1911.

Goals & Scope: The study investigates the relationship between an organization’s asset specificity, organizational memory, and resilience, considering different forms of asset specificity. Two forms are identified: “hard” (materials, location, facilities) and “soft” (technology, knowledge, and human capital) assets.

Ownership Structure/Sector: Private for-profit; manufacturing, energy, communications, biomedicine

Treatment of Built Environment: Explicit. “Hard asset specificity” (materials, location, facilities) is treated as a potential predictor of resilience.

Theory Engagement: *Developing.* The study proposes a novel integrated framework that conceptualizes the internal mechanisms of organizational resilience by linking asset specificity, strategic flexibility, organizational memory, and resilience into a single model. The study builds on pre-existing theories, including the resource-based view (RBV) and the economic theory of transaction costs (TCE), by adding new dimensions, specifically distinguishing between “hard” and “soft” asset specificity. This new dimension combines assets and capabilities to refine understanding of organizational resilience, assets, and the ability to deploy them.

Definition of Resilience/Recovery: The study defines organizational resilience as “the ability of an organization to recover quickly from adversity, which must be maintained by mobilizing and acquiring resources” (p. 1900).

Disruption Type: Not specified

Methodology: The study utilizes original data collected through a cross-sectional study design. A survey questionnaire was administered to 302 Chinese organizations (the timing of administration was not disclosed by the authors). The authors employed several statistical techniques, including exploratory and confirmatory factor analysis, regression analysis, and moderated mediation testing (bootstrap method).

Recovery/Resilience Measurement: The study authors operationalize resilience using five 5-point Likert scale items, scaled as (1) “very inconsistent” through (5) “very consistent” (p. 1905, p. 1909):

1. “Firm can cope with the changes brought about by external disruption.”
2. “Firm can maintain the effective operation of its core functions in the crisis.”
3. “Firm can quickly respond to disruption and recover to the previous state.”
4. “Firm can adapt to pressure after the crisis and learn to grow.”
5. “Firm often maintains high situational awareness.”

Independent Variable(s): The independent variables used in the study included hard asset specificity, soft asset specificity, strategic flexibility (resource conversion, novel combinations of resources), and organizational memory (research and development investment, relative professional knowledge of staff, etc.). Control variables include organizational age, scale, and industry.

Findings: The study’s findings show that hard asset specificity (materials, location, facilities) has a negative impact on organizational resilience, whereas soft asset specificity (technology, knowledge, and human capital) has a positive impact. Hard assets lock organizations into specific paths, creating sunk costs and reducing the ability to reallocate resources during crises. Soft assets promote strategic flexibility (the ability to reallocate resources), helping organizations anticipate and adapt to environmental changes. Organizational memory negatively moderates the connection between strategic flexibility and resilience because memory can create rigidity and inertia, making it difficult for organizations to accept unconventional realities and effectively adapt their strategies.

40) Somers S (2009) Measuring resilience potential: An adaptive strategy for organizational crisis planning. *Journal of Contingencies and Crisis Management* 17(1):12–23.

Goals & Scope: The goal of the study is to propose and pilot the Organizational Resilience Potential Scale (ORPS) to quantify pre-event resilience and examine the relationship between ORPS factors and resilience potential.

Ownership Structure/Sector: Public; municipal public works departments

Treatment of Built Environment: None

Theory Engagement: *Developing.* This study develops new theoretical and measurement approaches to organizational resilience, drawing on high reliability organizations (HROs) and preparedness literatures to distinguish passive and active resilience. It fundamentally challenges conventional crisis planning approaches that may inadvertently weaken resilience potential by deprioritizing the foundational preconditions needed for adaptive, improvised responses.

Definition of Resilience/Recovery: The study identifies multiple perspectives on resilience, including viewing it as both a passive and active capability. As a passive ability, the study defines resilience as “the ability of the organization to simply ‘bounce back’ (Wildavsky 1988), from a ‘distinctive, discontinuous event that creates vulnerability and requires an unusual response’ (Lengnick-Hall and Beck 2003, p. 2)” (p. 12). In contrast, the study defines active resilience as “‘a deliberate effort to become better able to cope with surprise’ (Lovins and Lovins 1982)” (p. 13).

Disruption Type: Not specified

Methodology: The research design is a quantitative case study of municipal public works departments.

- Data were collected from 96 public works departments using a cross-sectional structured survey questionnaire which adapted Mallak’s (1998) resilience index for the study’s proposed Organizational Resilience Potential Scale (ORPS).
- Data are analyzed using reliability testing, descriptive statistics, bivariate correlations (Pearson’s r , ANOVA) and multivariate regression to assess relationships between predictors and resilience potential.

Recovery/Resilience Measurement: The study measures latent (pre-event) resilience potential using the Organizational Resilience Potential Scale (ORPS), adapted from Mallak’s index. Six factors are identified as measures of resilience: goal-directed solution seeking, risk avoidance, critical situational understanding, ability of team members to fill multiple roles, degree of reliance on information sources, and access to resources. All are subjective measures on a seven-point visual analog scale. While the study does not divulge the text of the survey items used, they do identify Mallak (1998) as the source for resilience measures.

Independent Variable(s): The study measures predictors of resilience, that is, risk perception, organizational structure, involvement in community planning, and accreditation, using five-point Likert scales. It also measures compliance with COOP planning (Continuity of Operations Planning) using a scale adapted from FEMA planning guidance (FEMA 2004). While the study does not include the text of the survey items used, authors do identify sources for the resilience correlate measures and the COOP planning compliance measure.

Findings: The study finds that two variables act as the strongest predictors of resilience potential: Continuity of Operations (COOP) planning and managerial information seeking. Accreditation showed a positive but weak correlation with resilience potential, while other hypothesized predictors demonstrated no statistically significant effects. The findings support the study's argument that planning activities should focus on building adaptive capacity rather than encouraging reliance on rigid, step-by-step crisis plans. The ORPS proved to be a useful tool for capturing variation in resilience planning across organizations.

41) Stevenson JR, Brown C, Seville E, Vargo J (2018) Business recovery: An assessment framework. *Disasters* 42(3):519–540.

Goals & Scope: The goal of the study is to present an assessment tool of post-disruption business recovery called the Business Recovery Assessment Framework (BRAf). The study employs a dataset of business surveys conducted in the wake of the 2010 and 2011 Canterbury, New Zealand earthquakes. The study argues and demonstrates that the selection of recovery indicators results in varied conclusions and justifies a systematic approach to assessing recovery. The article is divided into two main sections: 1) an empirical analysis that compares business recovery indicators, and 2) a practical guide to applying the Business Recovery Assessment Framework (BRAf), presented as a diagnostic and assessment tool for evaluating organizational recovery.

Ownership Structure/Sector: Private for-profit; multi-sector

Treatment of Built Environment: Explicit (authors consider the build environment as a control for the degree of hazard impact, as well as physical exposure)

Theory Engagement: *Developing.* The study develops and proposes the Business Recovery Assessment Framework (BRAf). It is a conceptual and empirical framework-building study, combining literature review with empirical data from Christchurch, New Zealand following the 2010-2011 earthquakes.

Definition of Resilience/Recovery: The study is not anchored in a single recovery definition. Rather, multiple approaches to conceptualizing and defining recovery in previous studies are presented in order to support the authors' argument that selected indicators should align with definitions in recovery assessments.

Disruption Type: Natural hazard (Earthquake)

Methodology: The study design employs a mixed-methods approach, combining survey and interview data with a conceptual framework to assess business recovery processes. The proposed framework (BRAf) was used both as a resilience assessment tool and a diagnostic model to identify facilitators and barriers to recovery.

- Data were collected using structured surveys conducted between July and December 2013, approximately 2-3 years post-event. 541 organizations participated in the survey.

- Data are analyzed using analysis of covariance (ANCOVA) of different recovery indicators, demonstrating significantly different results.

Recovery/Resilience Measurement: Survey respondents answered 49 questions about their business and its experiences, drawing on the Canterbury Organizational Resilience and Recovery (CORR) Survey. The article presents a subset of resilience metrics, including the specific survey question text:

1. Operational status: “If your organization closed temporarily, for how long did it close? (days)”
2. Current situation: “With the earthquakes in mind, is your organization: 1) significantly better off, 2) slightly better off, 3) the same, 4) slightly worse off, 5) significantly worse off”
3. State of recovery: “Which of the following statements best describes your organization at the present time: 1) the event never impact our organization, 2) the event was positive for our organization, 3) we have fully recovered from the earthquakes, 4) we are still recovering from the earthquakes, 5) we are still in survival mode following the earthquakes, 6) we are no longer trading”
4. Ability to meet demand: “To what extent was your organization able to meet the demand for your product or services (at given time periods)?: 1) Completely (80-100 %), 2) Mostly (60-80 %), 3) Partially (40-60 %), 4) Limited (20-40 %), 5) Unable (0-20 %)”

Independent Variable(s): Because the purpose of this study is to demonstrate variation in conclusion based on the selection of recovery indicators, there are no independent variables included in the analysis. However, the analysis includes a number of control variables, including:

- Ownership status (renter versus non-renter)
- Degree of impact, a variable reflecting reported aggregate disruption from a number of impacts, including “critical infrastructure disruption, structural and non-structural building damage, stock loss, supplier interruptions, neighborhood effects, and staff wellbeing” (p. 529). While the authors do not divulge the survey question item text, they do cite the source for this indicator as Brown (2015).
- Although not included in the empirical section of the article, the Modified Mercalli Intensity (MMI) scale and Peak Ground Acceleration (PGA) are discussed in the practical guidance section of the article as examples of measures used in the Canterbury study to control for physical hazard exposure.

Findings: The study results compare the performance of three different recovery indicators. Specifically, the choice of indicator leads to different conclusions regarding the relationship between ownership status and recovery. Also, each indicator assesses data at different time steps:

- Operational status: Owners recovered better than those who rented; immediately post-event

- Ability to meet demand: No difference in recovery between those who rent and own; 2 years post-event
- Current situation: Tentatively demonstrates renters recovered better than owners; 2.5 years post-event

The main takeaway proposed by the study is that recovery needs to be measured using multiple indicators.

42) Su S, Baird K, Munir R (2023) Organisational resilience: The role of organisational culture from an organisational life cycle perspective. *International Journal of Manpower* 44(3):403–421.

Goals & Scope: The study examines the influence of different dimensions of organizational culture on organizational resilience. The authors aim to identify which cultural attributes are most effective for building resilience at different points in an organization's development.

Ownership Structure/Sector: Private for-profits; Multisector

Treatment of Built Environment: None.

Theory Engagement: *Extending.* The study extends organizational culture and resilience theories to include an organizational life cycle (OLC) perspective (e.g., contingency theory).

Definition of Resilience/Recovery: The study defines resilience as an “organization’s capacity to cope with unexpected situations (i.e., robustness), ability to recognize and utilize opportunities and take the rapid actions required in an unstable environment (i.e., agility) and ability to ensure employees’ have cohesion in dealing with unexpected situations (i.e., integrity)” (p. 404).

Disruption Type: Not Applicable

Methodology: The study employs a quantitative approach using original data.

- Data were collected through a structured survey questionnaire completed by 410 respondents, though the authors do not clarify whether these individuals represent distinct organizations or multiple respondents from within the same organization.
- Data are analyzed using structural equation modeling (SEM) to test associations between culture and resilience within each OLC stage.

Recovery/Resilience Measurement: The study measures resilience using nine five-point Likert scale items (1 = strongly disagree to 5 = strongly agree). The measures are adopted from Kantur and Iser-Say (2015). The ultimate resilience score was calculated using the average score of the nine items. The article does not present the specific survey question text for the nine items measuring resilience.

Independent Variable(s): There are two independent variables. These are organizational culture (respect for people/teamwork, outcome orientation, innovation, and attention to detail) and the organizational life cycle stage, which is not modeled as a predictor or mediator, but serves as a contextual moderator, allowing the study to compare how cultural dimensions influence resilience differently across birth, growth, maturity, revival, and decline stages.

Findings: Findings demonstrate that the respect for people/teamwork cultural dimension is positively associated with resilience across all OLC stages (birth, growth, maturity, and revival stages). Additionally, the outcome-oriented (i.e., innovation) culture dimension enhances organizational resilience in the growth and revival (i.e., maturity) stages.

43) Thomas A, Suresh M (2023) Readiness for sustainable-resilience in healthcare organisations during Covid-19 era. *International Journal of Organizational Analysis* 31(1):91–123.

Goals & Scope: The goal of this study is to develop and propose a conceptual model in order to identify, analyze, and categorize the readiness factors that contribute to sustainable resilience in the hospital setting during the COVID-19 pandemic.

Ownership Structure/Sector: Not specified; Healthcare (hospitals)

Treatment of Built Environment: None.

Theory Engagement: *Developing.* The study develops a new theoretical framework of sustainable-resilience readiness for healthcare, extending existing resilience and sustainability theories into a combined model.

Definition of Resilience/Recovery: The authors define resilience as “the process by which an actor (i.e. individual, organisation, or community) builds and uses its capability endowments to interact with the environment in a way that positively adjusts and maintains functioning before, during and following adversity,” drawing on Vakilzadeh and Haase (2020) (p. 93).

Disruption Type: Pandemic

Methodology: This quantitative, exploratory study develops a conceptual framework for measuring resilience readiness using original data. It seeks to identify which resilience readiness factors are highly influenced by other resilience factors (conceptually equivalent to dependent variables in a regression analysis) and which are foundational resilience readiness factors that drive other factors (conceptually equivalent to independent variables in a regression analysis).

- The study does not make explicit when data were collected.
- Data were collected through structured survey questionnaires and interviews with 29 healthcare professionals. The healthcare professionals rank and establish the relationship between factors. The study does not make explicit how many hospitals are represented by the data.
- Data is analyzed using Total Interpretive Structural Modeling (TISM) and MICMAC (Cross-Impact Matrix Multiplication Applied to Classification) analysis to structure and

rank ten readiness factors for resilience. MICMAC analysis involves the categorization of identified factors into classes based on how much influence they exert on other factors (driving power) and how much they are influenced by others (dependence).

Recovery/Resilience Measurement: Resilience is operationalized as a readiness capacity via the presence of and interaction among organizational, cultural, technical, and resource-based factors that enable organizations to maintain operations and adapt during crises like COVID-19. The authors provide definitions of factors, but do not present factor metrics.

Independent Variables: The authors provide definitions of factors, but do not present factor metrics. A total of ten factors and their interrelationships are analyzed: 1) environmental scanning, 2) awareness and preparedness, 3) team empowerment and working, 4) transparent communication system, 5) learning culture, 6) ability to respond and monitor, 7) organizational culture, 8) resilience engineering, 9) personal and professional resources, and 10) technology capability.

Findings: The study finds that organizational culture and personal/professional resources are the strongest drivers, shaping all other resilience readiness factors. In contrast, the ability to respond and monitor was found to be the most dependent outcome factor.

44) Whitman Z, Stevenson J, Kachali H, Seville E, Vargo J, Wilson T (2014) Organisational resilience following the Darfield earthquake of 2010. *Disasters* 38(1):148–177.

Goals & Scope: The study aims to examine the resilience and recovery of organizations in Canterbury, New Zealand following the 2010 Darfield earthquake. It identifies the types of impacts and disruptions that organizations experienced, akin to an initial impact assessment. However, it contrasts with a traditional impact assessment by analyzing whether mitigating factors (resilience attributes) supported or hindered recovery progress in the initial few months following the earthquake.

Ownership Structure/Sector: Private for-profits; Multisector

Treatment of Built Environment: Comprehensive. The built environment is explicitly considered in the analysis and in multiple ways:

- As impact assessment questions: structural damage, utilities disruptions, damage to ground surface, damage to neighboring organizations/building, and inability to physically access building sites.
- As mitigating factors: Examples include items such as “Well-designed and well-built buildings.”
- As reasons for organizational closure: Examples include “Building waiting to be structurally assessed” and “Building declared unsafe.”

Theory Engagement: *Testing.* The study applies elements of the Resilient Organizations Research Programme’s Benchmark Resilience Tool (BRT) in the specific case of organizations impacted by the 2010 Darfield earthquake in Canterbury, New Zealand.

Definition of Resilience/Recovery: Resilience is defined as the “organizational attributes that mitigate the effects of disasters and allow organizations to adjust to possibly damaging changes post disaster” (p. 153). Recovery, despite being measured, is not given an explicit definition. Rather, authors implicitly define recovery as the ability of organizations to overcome both direct (e.g., repair progress) and indirect (e.g., staff well-being) disruptions in order to continue organizational operations.

Disruption Type: Natural Hazard (Earthquake)

Methodology: This quantitative follows an explanatory research design.

- Data were collected in November 2010 (two months after the initial earthquake) and February 2011 (before subsequent aftershocks in 2011).
- A total of 376 organizations participated in the survey.
- Data are analyzed using descriptive statistics, correlation tests, and the Benchmark Resilience Tool to identify patterns in organizational disruption, recovery, and resilience.

Recovery/Resilience Measurement: The study operationalizes resilience through a shortened version of the Benchmark Resilience Tool (McManus 2008, Stephenson et al. 2010), which measures 13 indicators to create an organizational resilience “thumbprint” score. The study does not present the metrics used corresponding to each indicator, nor do they report out resilience “thumbprint” scores.

The study identifies mitigating factors by asking organizations to select the most useful factors for mitigating disruptions to operations from a pre-defined list of 14 potential factors. The authors present the full list of mitigating factors:

1. Backup/alternatives to lifelines
2. Critical services restored quickly or not interrupted
3. Relationship with staff
4. Relationship with banks or lenders
5. Relationship with neighbors
6. Available cash or credit
7. Spare resources (such as equipment or extra people)
8. Insurance
9. Business continuity, emergency management, or disaster preparedness plan
10. Backup or alternative site
11. Practiced response to a disaster
12. Emergency kit
13. Well-designed and well-built building
14. Median number of employees

Independent Variable(s): The study compares indicators of impact and resilience/recovery outcomes across organizational sector and location. It also reports relative damage across groups that have shown empirical relationships to mitigate damage, such as organization size (i.e., number of employees), ownership structure, age, and structure.

Findings: The study finds that organizational sector, geographic location, and dependency on critical infrastructure services strongly shape organizational recovery experiences, and that human, physical, and service continuity factors were central to organizational resilience. Specifically, hospitality and Central Business District (CBD) based organizations were most likely to close, while agriculture and lifelines were especially vulnerable to service disruptions. Across all sectors, staff well-being, cash flow, and customer loss emerged as the most significant challenges in early recovery. The most effective mitigating factors were strong staff relationships, sound building design, and rapid restoration of critical infrastructure services.

45) Wicker P, Filo K, Cuskelly G (2013) Organizational resilience of community sport clubs impacted by natural disasters. *Journal of Sport Management* 27(6):510–525.

Goals & Scope: The aim of this study was to examine the impacts of natural disasters on the organizational resilience of community sports clubs. Specifically, the study seeks to identify the main predictors of organizational recovery, taking into account such factors as resilience levels, organizational size, recovery time, extent of impact, and receipt of recovery funding.

Ownership Structure/Sector: Not specified ownership structure; Sports and recreation (Community sports clubs)

Treatment of Built Environment: Comprehensive. The built environment is incorporated into the analysis in two ways:

- As a resilience metric, the availability of alternative facilities when the organization's own facilities cannot be used.
- As impacts to facilities, down to specific rooms and facility functions (bar, kitchen, and dining facilities)

Theory Engagement: *Testing.* The study tests Bruneau et al.'s (2003) conceptualization of resilience in the sport club context.

Definition of Resilience/Recovery: The study defines organizational resilience as “the maintenance of positive adjustment under challenging circumstances such that the organization emerges from those conditions strengthened and more resourceful,” quoting Vogus & Sutcliffe (2007, p. 3418).

While recovery is not explicitly defined, the metrics used to measure recovery (see below) imply that the study defines recovery as the organization's current operating status and post-event recovery progress.

Disruption Type: Natural Hazard (Cyclone, Flooding)

Methodology: This quantitative, exploratory study uses original data to identify associations between resilience, resources, and recovery.

- The study does not disclose when data were collected, but they do include a binary indicator of whether organizations have experienced either short-term (three or fewer months) or long-term (beyond three months) recovery.
- Data were collected using a structured survey questionnaire. A total of 200 organizations participated in the study.
- Data are analyzed using descriptive statistics, reliability scores, exploratory factor analysis, and multiple regression analyses.

Recovery/Resilience Measurement: This study distinguishes between resilience and recovery, treating resilience attributes (calculated as a single score) as one of multiple independent variables and recovery as the dependent outcome. Recovery is operationalized as the extent to which organizations returned to pre-disaster functioning, while resilience is measured through organizational attributes such as robustness, redundancy, resourcefulness and rapidity:

Resilience is operationalized through the four dimensions of resilience, each measured by multiple survey items. Respondents rated these items on a five-point Likert scale (1 = not at all like our club to 5 = very much like our club). In total, 21 items comprise the resilience indicator, introduced with the stem “Our club has the capability to...” (p. 516):

1. “cope with the impact of unexpected incidents” (robustness dimension)
2. “withstand external pressures” (robustness dimension)
3. “cope with challenges” (robustness dimension)
4. “withstand stress without losing focus” (robustness dimension)
5. “continue to deliver its services during unexpected events” (robustness dimension)
6. “use other facilities when its own facilities cannot be used” (redundancy dimension)
7. “re-allocate resources within the club” (redundancy dimension)
8. “substitute volunteers across positions” (redundancy dimension)
9. “substitute equipment when its own equipment cannot be used” (redundancy dimension)
10. “employ alternative options to sustain operations during unexpected events” (redundancy dimension)
11. “prioritize tasks during unexpected events” (resourcefulness dimension)
12. “generate revenue from multiple sources” (resourcefulness dimension)
13. “mobilize resources during unexpected events” (resourcefulness dimension)
14. “employ sufficient back up resources to sustain operations during unexpected events” (resourcefulness dimension)
15. “identify problems during unexpected events” (resourcefulness dimension)
16. “acquire support from other organizations when needed” (resourcefulness dimension)
17. “achieve goals in a timely manner” (rapidity dimension)
18. “adapt quickly to changing circumstances” (rapidity dimension)
19. “meet priorities in a timely manner” (rapidity dimension)
20. “Restore services quickly during unexpected events” (rapidity dimension)

21. “respond quickly to disruptive events (rapidity dimension)

Recovery is operationalized as a two-part question: 1) “Is the club currently operating?”, and 2) “To what extent has the club recovered from the impact of the most severe natural disaster (in %)?” (p. 516).

Independent Variables: Survey item wording is described in general terms, but the study does not provide the specific phrasing. Independent variables examined in relation to recovery progress were organizational resilience score (see operationalization above), club size (membership numbers), recovery time, severity of disaster impact, resource use (government grant), and type of sport.

Findings: The study finds that organizations reported relatively high levels of organizational resilience, in particular, in rapidity and robustness, but scored lower on redundancy. In addition, higher resilience, larger size, more time since the disaster, and use of government grants all significantly predicted increased recovery, while more severe disaster severity hindered recovery. Organizations (sports clubs) with specialized outdoor facilities (e.g., golf, equestrian) were less likely to recover fully.

46) Wiseman RM, Bromiley P (1996) Toward a model of risk in declining organizations: An empirical examination of risk, performance and decline. *Organization Science* 7(5):524–543.

Goals & Scope: The study aims to explain the relationship between organizational risk and performance. Specifically, they seek to provide evidence in response to two questions: 1) whether organizations increase risk following organizational decline in size, and 2) whether increases in risk negatively influence performance among declining organizations.

Ownership Structure/Sector: Private for-profits; Manufacturing and food processing

Treatment of Built Environment: None.

Theory Engagement: *Extending.* The study extends Cyert and March’s (1963) behavioral theory of the firm (BTOF), combining their model with ones presented by Bromiley (1991) and Lant and Montgomery (1987) to test a novel model of organizational risk and decline.

Definition of Resilience/Recovery: The study does not explicitly define recovery or resilience. Rather, the study defines organizational performance in terms of equity, assets, and sales. The study also defines organizational decline in terms of organizational size.

Disruption Type: Chronic Stressor

Methodology: The study combines original and secondary data.

- All data were obtained from secondary data sources for the study observation period 1975 through 1988. Specifically, financial performance data were sourced from

Compustat and analyst forecasts from the Institutional Brokers' Estimate System (IBES). The final sample size was 323 organizations.

- Data were analyzed using time-series analysis, specifically two models that explain risk and performance.

Recovery/Resilience Measurement: The study does not model recovery or resilience, and therefore no measures of recovery or resilience are presented. However, organizational decline, the logical inverse of recovery, is captured using two measures of size (which the study equates to assets/resources and ultimately, decline): 1) percent decrease in employment, and 2) percent decrease in sales.

Independent Variable(s): The models used in the study to explain organizational performance and organizational decline include a number of independent variables, including performance, slack, aspirations, expectations, and risk (income stream uncertainty).

Findings: The study does not find support for the argument that declining firms reduce risk which leads to subsequent reductions in performance. Rather, the study finds that decline and loss of slack resources increases risk, which reduces performance, and results in further organizational decline. Declining firms undertake unprofitable risks that ultimately exacerbate the decline.

47) Zhang S, Sun Q, Dai L, Wang X (2023) Turn calamities into blessings: The impact of resource reconfiguration and firm resilience on the company's recovery and growth in the COVID-19 times. *Journal of Organizational Change Management* 36(2):257–272.

Goals & Scope: The goal of the study is to build an integrated theoretical framework of organizational resilience within the context of COVID-19 disruptions. It investigates how resource reconfiguration shapes organizational resilience, and how resilience in turn influences disruption impact, profit growth, and innovation, while considering the moderating effect of environmental uncertainty.

Ownership Structure/Sector: Private for-profit; Multisector

Treatment of Built Environment: None

Theory Engagement: Extends the dynamic capabilities view of resilience to propose a new conceptual model of the relationship among resource reconfiguration, organizational resilience, disruption impact, profit growth, innovation and environmental uncertainty.

Definition of Resilience/Recovery: The study defines organizational resilience as “the ability to respond to threats and pressures, restore to the original state after disruption, and maintain growth and development,” citing Carvalho and Areal (2016) and Ma et al. (2018) (p. 259).

Disruption Type: Pandemic

Methodology: This quantitative study follows an explanatory research design, combining both original and secondary data.

- The data collection date was not disclosed.
- Data were collected using a structured survey questionnaire, in addition to revenue and expenditure secondary data for fiscal year 2020 and 2019 that was requested from each participant (and used to calculate profit growth for each organization). 207 organizations participated.
- Data are analyzed using Structural Equation Modeling (SEM) and reliability/validity analysis.

Recovery/Resilience Measurement: Organizational resilience is operationalized using a three-item scale to measure firm resilience using a five-point Likert scale (1 = strongly disagree to 5 = strongly agree):

1. “We are able to cope with changes in our business brought on by sudden disruptions”
2. “We are able to easily adapt our business operations to a sudden disruption”
3. We are able to provide a quick response to the negative effects of a sudden disruption on our business”

Independent Variables: There are two independent variables in the study: 1) organizational resilience (operationalized above) and 2) resource reconfiguration (p. 263 for the operationalization of resource reconfiguration). Resilience is treated as a mediating variable, meaning it is modeled as both a dependent (i.e., is predicted by resource reconfiguration) and independent (i.e., predicts recovery) variable.

Findings: The study found that resource reconfiguration significantly enhanced firm resilience, and this effect was stronger under conditions of high environmental uncertainty. In turn, greater resilience reduced disruption impacts and promoted both profit growth and innovation during the COVID-19 pandemic. Organizational resilience also served as a mediator, transmitting the positive effects of resource reconfiguration onto these performance outcomes.

5. Impact and Conclusions

This annotated bibliography advances the study of organizational resilience and recovery by compiling insights from 47 empirical investigations across multiple disciplines, hazard types, and organizational contexts. By providing a systematic account of how resilience and recovery are defined, operationalized, and measured within a broad, multidisciplinary empirical literature, this review identifies broader patterns that reveal where the field of organizational resilience and recovery converges, diverges, and the current gaps that limit the field, signaling the need for further conceptual development and systematic measurement.

First, the literature reveals a methodological and measurement gap. While studies rely heavily on primary data collection through self-reported surveys from organizational representatives, this reliance has produced a fragmented collection of metrics with limited cross-study comparability. Establishing a standardized suite of indicators is essential to enable cross-study comparability, while future synthesis efforts would benefit considerably from comparative case designs and meta-analyses.

Second, a temporal scope gap persists across current empirical designs. The majority of studies restrict their focus to the immediate post-disaster period, or shortly thereafter, leaving long-term organizational recovery trajectories largely unexamined. To advance the field, future empirical work should emphasize longitudinal designs tracking organizations across multi-year periods to capture how post-disruption adaptation evolves into recovery (or the lack thereof).

Third, despite these empirical limitations, human capital emerges as a frequently examined resilience factor, with employee-level investments consistently identified as an important mechanism for resilience. This finding highlights the inherent reliance of physical systems on human operators. Additionally, it offers a key direction for future empirical research to test how human capital investments shape workforce availability, technical expertise, and operational decision-making to accelerate recovery alongside investments in the built environment.

Beyond its systematic review of the organizational resilience and recovery literature, this bibliography documents its methodology in a transparent and reproducible manner. By detailing the systematic steps used to search, screen, and evaluate studies under defined inclusion and exclusion criteria, this review provides a foundation for future research to address these literature gaps and expand the boundaries of organizational resilience research.

Individual organizations render the services necessary to meet societal needs such as those for education and healthcare. Establishing standardized metrics for organizational resilience offers the empirical baseline needed to systematically analyze organizations and to ultimately understand how institutions support community resilience amid growing uncertainty and rapidly changing environments.

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