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Distinct but Complementary: Dynamic and Improvisational Capabilities

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There has been very little theoretical or empirical research examining how dynamic and improvisational capabilities work together to achieve organizational outcomes such as resiliency. To date, empirical and conceptual discriminant validity between dynamic and improvisational capabilities has remained unsupported because there is a dearth of research examining these concepts in the same empirical study, leaving uncertainty for managers and scholars. This study empirically examined the discriminant difference between dynamic and improvisational capabilities with an initial pilot study (Sample 1: N = 75) using the HTMT ratio as the primary criterion and HTMT confidence intervals as the secondary criterion. Overall, this research demonstrated that dynamic and improvisational capabilities are distinct concepts. Several limitations are discussed, as well as theoretical and practitioner implications and future research opportunities.

In 1967, the Apollo I tragedy led NASA to institutionalize strict rules and structures. By 1970, moon missions were almost routine (Lovell & Kluger, 1994, as cited in Rerup, 2001). On April 11, 1970, Apollo 13 launched toward its third lunar landing, but an unexpected explosion damaged the main module and oxygen tanks. On the ground, engineers assembled a prototype from onboard materials like duct tape, a plastic bag, a battery, hosing, and cardboard, then guided astronauts to build a lithium hydroxide canister (Lovell & Kluger, 1994, as cited in Rerup, 2001) on the spacecraft. This real-time, collaborative reconfiguration exemplified improvisation, saving all crew members.

The Apollo 13 case study shows that extensive dynamic capability investments may be insufficient in certain crises. The Dynamic Capabilities View (DCV) emphasizes sensing, seizing, and transforming resources to manage disruptions (D. J. Teece, 2007), and works best in moderately turbulent environments (Eisenhardt & Martin, 2000). Firms invest in dynamic capabilities through R&D, new product launches, simulations, developing emergency procedures, supply chain management, and resource slack. However, organizations can only implement dynamic capabilities with thoughtful consideration and planning, which may not be possible when there is insufficient time (Pavlou & El Sawy, 2010; Winter, 2003). Improvisational capabilities, or “the

ability to spontaneously reconfigure existing resources to build new operational capabilities for urgent, unpredictable, novel situations” (Pavlou & El Sawy, 2010, p. 444), are vital when planning and action converge (Moorman & Miner, 1998b).

While conceptually different, there is a dearth of research examining dynamic capabilities and improvisational capabilities in the same empirical study. Most studies have examined these capabilities separately (Clampit et al., 2021; Cunha et al., 1999; Moorman & Miner, 1998a, 1998b; Pavlou & El Sawy, 2011; D. J. Teece et al., 1997; D. J. Teece, 2007, p. 2016), so there is very little theoretical or empirical research explaining how dynamic and improvisational capabilities work together to achieve outcomes such as resiliency.

Preliminary research indicates that the resilience of small businesses helped soften the economic blow of the 2020 pandemic on the U.S. economy and pushed the economy to innovate and adapt (Richards, 2023). Recent research also demonstrates the importance of understanding how small businesses implement dynamic capabilities as well as improvisational capabilities (Richards, 2023; Tarpey et al., 2023). By examining and comparing small businesses’ approaches to activating dynamic and improvisational capabilities, this research sheds light on how these capabili-

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ties are distinct in small businesses when used to develop resiliency.

This study asks: Are dynamic and improvisational capabilities distinct? Empirical and conceptual discriminant validity remains unproven, leaving uncertainty for managers and scholars. Using a Prolific dataset and focusing on the context of organizational resiliency, this research shows that in small firms, improvisational capabilities differ from dynamic capabilities in building resilience.

Literature Review

Capabilities Framework

This study applies the capabilities framework to explain how organizations adapt operations to environmental changes (Pavlou & El Sawy, 2010; D. Teece et al., 2016). Capabilities include tangible and intangible resources that enable organizations to achieve a strategic advantage (Barney, 1991). Like individual skills, organizational capabilities are resources and processes that produce desired outcomes (Ismael et al., 2011).

The Resource-Based View (RBV) provides the foundational logic for this framework by explaining how firms achieve competitive advantage through resources that are valuable, rare, inimitable, and non-substitutable (VRIN-Barney, 1991). Building on this foundation, the dynamic capabilities perspective extends RBV by focusing on how organizations purposefully reconfigure resources in response to environmental shifts (Eisenhardt & Martin, 2000; D. J. Teece et al., 1997).

Dynamic Capabilities

Dynamic capabilities are commonly conceptualized as an organization's ability to sense opportunities and threats, seize opportunities, and transform its resource base (D. J. Teece, 2007). Unlike operational capabilities, which sustain daily functions, dynamic capabilities alter operations to match environmental change (D. J. Teece et al., 1997).

Dynamic capabilities work best in moderately dynamic markets, where change is steady and predictable (Eisenhardt & Martin, 2000) and they involve patterned, purposeful behaviors (Helfat & Peteraf, 2003). Barreto (2010) defines them as "the firm's potential to systematically solve problems, formed by its propensity to sense opportunities and threats, to make timely and market-oriented decisions, and to change its resource base" (p.271). In moderately turbulent environments, these capabilities enhance performance by offering a planned and systematic approach to adapting operational capabilities. As Cohen and Levinthal (1994) aptly declare, "fortune favors the prepared firm" (p. 227).

Improvisational Capabilities

In contrast, improvisational capabilities emphasize action under conditions where planning is not feasible or outdated. Abrantes et al. (2022) define improvisational capabilities as the deliberate convergence of design and ex-

ecution of novel action, with four elements: it involves action, novelty, deliberate intent, and design during enactment. A defining feature of improvisation is the collapse of time between cognition and action. Empirical work demonstrates that speed and novelty are so tightly intertwined that they often form a single underlying dimension, what Kung and Kung (2019) describe as a speedy novel solution. Improvisational capabilities support real-time interventions, allowing organizations to reconfigure resources and deploy novel tactics quickly, before their competitors (Ma et al., 2021; Zenk et al., 2020).

Importantly, Pavlou and El Sawy (2010) noted that improvisation exhibited the three characteristics that qualified it as a capability: collective, repeatable, and purposeful, aligning it with Winter's (2003) definition. As a result, improvisation has been recognized across information technology, management, and strategy as a legitimate source of competitive advantage (Crossan, 1998; Crossan et al., 1996). Improvisation can operate at individual, team, or organizational levels and is particularly beneficial during organizational change and turbulent environments (Cunha et al., 1999; Pavlou & El Sawy, 2010). Improvisation occurs when planning is infeasible or outdated (Pavlou & El Sawy, 2010). Supportive organizational cultures that emphasize empowerment, experiential learning, problem-solving, and trust further enhance improvisational capacity (Crossan et al., 2005).

Dynamic Capabilities Versus Improvisational Capabilities

While both capabilities help organizations navigate and support adaptation, they differ fundamentally in temporal orientation and mode of action. Dynamic capabilities focus on accumulating information and structured planning over time, while improvisational capabilities prioritize spontaneity, novelty, and intuition in real time (Pavlou & El Sawy, 2007).

The relationship between the two remains debated. Carvalho (2022) suggests they are interdependent and mutually enabling. While improvisation appears spontaneous, it relies on preparation and experience (K. Weick, 1993; K. E. Weick, 1998). Some see dynamic capabilities as a precursor, creating the flexibility that enables improvisation (D. J. Teece et al., 1997; Wang & Ahmed, 2007). The interplay likely depends on context, industry, structure, and size, warranting further study.

Classification adds complexity: some label improvisational capabilities as first-order (Pavlou & El Sawy, 2010), others as higher-order (Ma et al., 2021) reflecting ongoing theoretical ambiguity. The COVID-19 pandemic highlighted that both were vital for small business survival when traditional planning failed (Clampit et al., 2021). By applying the capabilities framework, the researchers contend that organizations establish routines and processes by investing in dynamic capabilities (D. J. Teece et al., 1997). When these routines and processes are reconfigured as a response to disruptive or unanticipated changes, they become improvisational capabilities (Pavlou & El Sawy, 2007, 2010,

2011). The use of both dynamic and improvisational capabilities became critical for business survival and resilience.

Organizational Resiliency and Crisis Management

Rerup (2001) argued that resilient organizations demonstrate both anticipation and improvisation to achieve resiliency. This position also aligns with recent research by Williams et al. (2017), which proposed that fusing crisis management and resilience research streams better explains how organizations anticipate and respond to adversity and develop resilience. Prior studies have firmly established how specific capabilities are essential for recovery and post-crisis growth (Conz & Magnani, 2020; Ismail et al., 2011; Sheffi & Rice, 2005). This research demonstrates how dynamic and improvisational capabilities complement each other in achieving resilience, which is defined as the ability to survive and thrive through unexpected change (Lengnick-Hall et al., 2011). In today's environment, resilience is a clearly a competitive advantage.

The crisis management lens clarifies how these capabilities work together. Crises, low-probability, high-impact threats (Pearson & Clair, 1998), vary in scale and onset speed. The research on crises and response to crises remains fragmented due to definitional disagreements (Perry & Quarantelli, 2005), real-time analysis challenges (Forgues & Roux-Dufort, 1998), and difficulty comparing cases (Roux-Dufort, 2016). Two main perspectives exist: event-based, which examines causes and impacts after occurrence, and process-based, which views crises in stages, emphasizing anticipation, coping, and adaptation (T. A. Williams et al., 2017). This study adopts the process perspective, asserting that applying different capabilities at each stage enables more effective navigation and fosters resilience.

Integrated Framework

To strengthen the conceptual bridge between capability theory, organizational resilience and crisis management, improvisational capabilities and dynamic capabilities can be situated within a temporal, process-oriented model comprising three interrelated phases: anticipation, coping and adaptation. This framing clarifies not only what each capability does, but when and how it contributes to resilience.

This integration framework allows capability theory to be applied beyond static typologies and toward a temporal interpretation where different level mechanisms matter at different points in the resilience process. Conceptually, this research adopts a process-oriented view of resilience in which improvisational and dynamic capabilities contribute at different stages of the disruption cycle. Dynamic capabilities support anticipation and post-disruption adaptation, while improvisational capability enables real-time coping when uncertainty and time pressure constrain deliberate reconfiguration. Resilience thus reflects the temporal interplay of these distinct but complementary capabilities. See [Table 1](#) for a proposed integrated framework.

Hypothesis Development

Drawing on the dynamic capabilities view (DCV) and crisis management research, the researchers argue that dynamic and improvisational capabilities are distinct yet complementary in building resilience. Following Ducheck (2020) and Williams & Shepherd (2016), resilience develops in overlapping stages: anticipation, coping, and adaptation.

At the anticipation stage, the researchers posit that organizations attempt to observe and identify developments and threats, preparing for potential disruptions (Somers, 2009). This stage and effort are dominated by the sensing dimension of dynamic capabilities (D. J. Teece, 2007) and involves internal and external foresight to safeguard resources (Burnard & Bharna, 2011). Research (Lengnick-Hall et al., 2011; Vogus & Sutcliffe, 2007) indicates that organizations need a broad and accessible set of resources (e.g., knowledge, expertise, processes, personnel) to respond to challenging situations. Ducheck (2020) argues that an organization's prior knowledge and resource base are primary drivers towards resilience. While improvisation does not dominate this stage, it plays an important, subordinate role, shaping how flexible organizations are interpreting early environmental signals and how willing they are to deviate from plans when ambiguity persists. The theoretical implication is that anticipation may not be pure foresight, and even well-developed dynamic capabilities may face limits when creating novel solutions or under time constraints, which may mean improvisation becomes more necessary in later phases.

One of the primary tenets of coping is accepting the problem and acknowledging that the current plans or processes may not be sufficient for addressing the situation. Improvisational capability becomes the primary adaptive mechanism in this stage. While the importance of planning and preparedness is undeniable, improvising adds another dimension to an organization's ability to cope through its speediness of responding, its reconfiguration of resources, and the creation of novel solutions to unpredictable or unexpected situations (Kung & Kung, 2019; Suarez & Montes, 2019). While dynamic capabilities may help organizations with anticipation, the first stage of resiliency, improvisation, allows organizations to enter the second stage of coping (Ducheck, 2020), when dynamic capabilities, such as planning or preparation, are temporarily constrained or not possible (Pavlou & El Sawy, 2010; K. Weick, 1993; K. E. Weick, 1996). The theoretical implication is that the coping phase represents an opportunity when improvisational capabilities compensate for the limits of dynamic capabilities under extreme time constraints and uncertainty.

The adaptation phase consists of consolidation, learning and renewal in order to stabilize in a new environment. Although both capabilities deal with organizational adaptation and change, they differ in their temporal orientation, degree of structure, and triggering conditions. Dynamic capabilities may reassert dominance at this stage. Dynamic capabilities enable an organization to intentionally create, extend, or modify its resources to adapt to changing environments (D. J. Teece et al., 1997). They are deliberate, sys-

Table 1. Proposed Integrated Framework of How Improvisational Capabilities and Dynamic Capabilities Achieve Organizational Resilience

Phase	Dominant Capability	Primary Function
Anticipation	Dynamic capability	Sensing, option creation
Coping	Improvisational capability	Real-time action, novelty
Adaptation	Dynamic capability	Learning, reconfiguration

tematic, and embedded in processes such as strategic planning, investments in technology, scenario planning, and human resource management. In contrast, improvisational capabilities may act as a support for dynamic capabilities in this stage. Improvisation involves spontaneous and creative recombination of existing resources and knowledge in response to unexpected challenges and opportunities in almost real time (Moorman & Miner, 1998b), which dynamic capabilities can select, refine and routinize during adaptation phase. The theoretical implications are that improvisational capabilities and dynamic capabilities operate in sequence rather than in isolation.

This theoretical distinction suggests that dynamic and improvisational capabilities are conceptually distinct. To assess whether this conceptual distinction holds empirically, it is necessary to examine whether the two constructs can be measured independently and whether they do not overlap significantly in the empirical data. This research adopts a process-oriented view of resilience in which dynamic capabilities and improvisational capabilities contribute at different stages of the disruption cycle. This research posits that dynamic capabilities support anticipation and post-disruption adaptation, while improvisational capability enables real-time coping when uncertainty and time pressure constrain deliberate reconfiguration. Resilience therefore reflects the temporal interplay of these distinct but complementary capabilities. Therefore, the following hypothesis is proposed:

H1: Dynamic and improvisational capabilities will be empirically distinguishable in the context of organizational resilience by using the HTMT ratio and HTMT confidence intervals analysis of survey data.

Methods

The sample size was determined a priori using the guidelines recommended by Fritz and McKinnon (2007), in which they simulated six commonly used statistical methods for detecting mediation. Their research demonstrates that bias-corrected bootstrapping is the most powerful mediation test under various conditions and requires a smaller sample size than other methods. Based on Fritz and McKinnon's (2007) guidelines, the recommended sample size was 71.

Data Integrity

To ensure the integrity of the data, several measures were implemented. To address potential flatlining, participants who provided the same response to more than half

of the survey questions were excluded (Curran, 2016). Attention checks were used to identify whether participants thoroughly read and understood questions (Gummer et al., 2021). Instructed response items (Gummer et al., 2021) were used for the five attention checks (e.g., "If you are reading this, check Strongly Disagree." Participants who missed or skipped two or more attention checks were excluded; however, missing or skipping one attention check was allowed (Muszynski, 2023). Participants who did not complete the entire survey were also excluded.

Missing Data Management

Since the dataset included missing data, this research employed guidelines suggested by Hair et al. (2019), removing respondents with more than 15% of missing data. If the total missing data was less than 5% per indicator, the missing values were treated with mean replacement (Hair et al., 2019, 2022).

Research Biases

Common method bias (CMB) arises when the same method, such as a survey, is used to measure multiple constructs, which can inflate correlations and distort true relationships among variables (Podsakoff et al., 2012; L. J. Williams & Brown, 1994) and can result in implied significant relationships that do not actually exist. Podsakoff et al. (2012) proposed several techniques for controlling CMB, which were implemented in this study, such as different response formats for the dependent and independent variables and different Likert scales, with different anchors. A marker variable was added to the survey to empirically test for CMB (L. J. Williams et al., 2010). A three-item measure for guilt was used as the marker variable.

Social desirability bias is the tendency for respondents to portray themselves or their organization in a more flattering light (Schwab, 1999). This bias becomes more likely when respondents' answers contain sensitive information, such as organizational performance or strategy. To minimize this bias, participants were informed their responses would remain confidential throughout the data collection process.

Survey Instrument and Measures

Several scales, which were developed and validated in prior research, were used to construct the survey instrument. To improve its validity, the survey was pre-tested in multiple ways. First, an expert panel involved in man-

agement research provided feedback on the survey items. Then, Ph.D. students and two practitioners (one from a for-profit and one from a nonprofit) pre-tested the survey.

Dynamic Capabilities

Dynamic capabilities were measured using a scale developed and validated by Kump et al. (2019), based on Teece's (2007) conceptualization of dynamic capabilities, including sensing, seizing, and transforming. This scale aims to measure the general dynamic capabilities of an organization and uses a seven-point Likert scale ranging from "1 = Strongly Disagree" to "7 = Strongly Agree." This scale includes five items for sensing, four for seizing, and five for transforming. A sample item for sensing is: "Our company knows the best practices in the market." A sample item for seizing is: "Our organization can quickly relate to new knowledge from the outside or externally." For transforming, one item is: "By defining clear responsibilities, we successfully implement plans for changes in our company." The reliability for this measure was strong, with Cronbach's alpha values of $\alpha = .916$.

Improvisational Capabilities

Improvisational capabilities were measured using the organizational improvisation capability (OIC) scale developed and validated by Kung and Kung (2019). This scale captures two dimensions: speedy novel solution (SNS) and unplanned reconfiguration (UPR), with four items per dimension. It uses a five-point Likert scale ranging from "1 = Strongly Disagree" to "5 = Strongly Agree." A sample measure for speedy novel solution is: "We respond to new demands from customers immediately." An example of unplanned reconfiguration is: "When unplanned events happen, we are able to resolve the problems using available resources." The reliability for this scale was also strong, with $\alpha = .879$.

Organizational Resilience

Organizational resilience was measured using the dimensions of robustness, redundancy, resourcefulness, and rapidity. Bruneau et al. (2003) originally defined these dimensions in their study on community resilience, and Wicker et al. (2013) later adapted them for the organizational context of sports clubs and developed the items for each dimension. The scale was modified by replacing the word "club" with "organization" in the survey items. Each dimension was measured on a five-point Likert scale anchored by "1 = Not at all like my organization" to "5 = Very much like my organization." A sample item for robustness is: "Our organization has the capability to cope with the impact of unexpected incidents." An example of redundancy is: "Our organization has the capability to use other facilities when its own facilities cannot be used." An example of resourcefulness is: "Our organization has the capability to prioritize tasks during unexpected events." For rapidity, an example is: "Our organization has the capability

to achieve goals in a timely manner." The reliability of this scale was high, with $\alpha = .909$.

Control Variables

To minimize alternative explanations, factors that might covary with the variables were controlled (Aguinis & Vandenberg, 2014; Bernerth & Aguinis, 2016). Recent research (Hadida et al., 2015; Pettit et al., 2019) has demonstrated that some organizational characteristics may influence improvisation and resilience. The study controlled for organization size (Pettit et al., 2019), organization age (Wong et al., 2020), and organizational structure [for-profit versus nonprofit] (Calabrese, 2013; Searing, 2020).

Data Collection and Characteristics

Data was collected in 2025. The primary purpose of the survey was to conduct a preliminary test of discriminant validity between dynamic and improvisational capabilities. Participants were recruited through the Prolific platform (www.prolific.com), which is an online data collection service that recruits, selects, and compensates individuals for research projects. Researchers can pre-screen participants using over 250 demographic filters on the Prolific platform. The filters used for this research ensured respondents worked full-time for businesses or organizations with fewer than 500 employees and held roles of an owner or top management/c-suite executive.

After pre-screening, Prolific invited participants and directed them to the survey hosted on Qualtrics. The survey started with a consent form introducing the study and explaining its purpose and value. The consent form explained that the study was voluntary and anonymous and provided an estimate of the time required to complete the survey. Participants were required to consent, confirm their English proficiency, and verify they were 18 years of age or older to proceed. Participants were compensated according to Prolific's minimum compensation guidelines of \$12.00 per hour, which amounted to approximately \$2.00 per participant.

Ninety participants were recruited and participated in the survey ($N = 90$). Six participants failed three or more attention checks, so they were removed from the sample, and four were removed who had significantly quick survey completion times (less than three minutes) combined with straight-lining (Curran, 2016). Although organization size was a pre-screening criterion, five participants reported working for an organization with more than 500 employees, so they were excluded as well. After these removals, a final sample size resulted in $N = 75$, an 83% response rate.

Five participants had item-level missingness, but since the average level of item-missingness among those participants was less than 2%, they were retained (Hair et al., 2019). The total amount of missing data was less than 1%, and the data was determined to be missing completely at random (MCAR). Therefore, the missing values were addressed using mean replacement as recommended by Hair et al. (2019).

Table 2. Means, Standard Deviations, and Correlations of Participants

Variable	Mean	SD	1	2	3	4	5	6
1. Dynamic Capabilities	5.66	0.76						
2. Improvisational Capabilities	4.16	0.49	0.75***					
3. Organizational Resilience	4.02	0.53	0.72***	0.71***				
4. Guilt	2.06	1.05	0.10	0.13	-0.07			
5. Organization Age	13.52	10.89	-0.09	-0.11	0.42	-0.13		
6. Organization Size	35.71	68.24	0.01	-0.36	0.01	-0.51	0.33**	
7. For-Profit Status	0.97	0.16	-0.01	-0.07	-0.13	0.01	0.08	0.07

Note. $N = 75$. Business Size measures the number of full-time employees. For-profit status was coded as 1, while nonprofit status was coded as 0.

** $p < .01$.

*** $p < .001$.

The average age of the respondents was 43.23 years, and more than half were male (54.7%). Approximately 80% of the participants had a college degree, with 12% reporting having an associate's degree, 46.7% having a bachelor's degree, and 21.3% having an advanced degree. In terms of company size, 53.3% worked for businesses with ten or fewer full-time employees, 26.7% worked for companies with 11-49 full-time employees, 16% worked for organizations with 50 -149 full-time employees, and 4% worked for companies with 151-499 full-time employees. Only 2.7% of the participants were employed by a nonprofit, while the remaining worked for for-profit businesses. Sixty-three participants (84%) indicated themselves as the primary owner or executive leader of the organization. The participants represented 19 distinct industries. The largest group (14.7%, 11 individuals) worked in Construction, followed by Information and Technology (13.3%, 10 individuals) and Retail (10.7%, eight individuals). All other industries were represented by less than 10% of the participants.

Results

Means, Standard Deviations, and Correlations

SPSS was used to analyze the means, standard deviations, and correlations and generate the results. Table 2 presents the means, standard deviations, and correlations for the variables in Study 1. The table shows positive and significant relationships between DynCap and ImprovCap ($r = .75$, $p < .001$), and OrgRes ($r = .72$, $p < .001$). Similarly, positive and significant relationships between ImprovCap and OrgRes ($r = .71$, $p < .001$) were found.

Control Variables

To account for potential impacts on the dependent variables, several organizational factors were controlled: business age (measured in years), business size (measured by number of full-time employees), and for-profit versus nonprofit status (For-profit = 1, Nonprofit = 0). For this study, no controls demonstrated significant relationships with the primary variables in the model.

Since data for all variables were collected simultaneously, there was potential for common method bias in this study. To empirically test for this bias, a marker variable,

guilt, was added to the survey, following the recommendation by Williams et al. (2010). The marker variable is theoretically unrelated to any of the other variables being studied. If the marker variable correlates with the study variables, this may indicate common method variance. On the other hand, an insignificant association signifies less possibility of CMB. In this study, there was no significant correlation between the marker variable guilt and the other variables, reducing the concern for common method bias (see Table 2).

Analysis and Evaluation

The primary purpose of the study was to determine discriminant validity between Dynamic Capabilities and Improvisational Capabilities. SmartPLS 4 (Ringle et al., 2024) software was used to analyze the discriminant validity for this study. According to Hair et al. (2022), Hair et al. (2020), and Henseler et al. (2015), the primary criterion for discriminant validity assessment should be the Heterotrait-Monotrait Ratio (HTMT). The threshold level should be 0.85 or lower for dissimilar constructs and 0.90 for similar constructs. In Table 3, the results for the HTMT ratio are presented, and it is noted that all the HTMT values for the constructs in this model were lower than the threshold value of 0.85 and well below the more liberal 0.90 threshold, showing that these two constructs are capturing distinct and different measures.

For reflective constructs like the ones in this model, scholars (Hair et al., 2020, 2022) also recommend empirical testing to examine whether the HTMT values significantly differ from the threshold value. This testing is done by computing bootstrap confidence intervals by running the bootstrapping option. Bootstrapping occurs by drawing subsamples from the original dataset, then each subsample is used to estimate the model, which is repeated until the desired number of subsamples has been created, for example, 5,000 or 10,000, as specified by the researcher. As recommended (Hair et al., 2020, 2022), 10,000 subsamples, a one-tailed test type, and a 0.05 significance level were selected, and the complete bootstrapping option was employed. This analysis revealed that none of the values in the confidence intervals were equal to 1, which further sup-

Table 3. Discriminant Validity Using the Heterotrait-Monotrait (HTMT) Ratio

Variables	Dynamic Capabilities	Improvisational Capabilities
Dynamic Capabilities		
Improvisational Capabilities	0.835	
Organizational Resilience	0.789	0.815

Note. $N = 75$

Table 4. Discriminant Validity Using the Heterotrait-Monotrait (HTMT) Confidence Intervals

	Original sample	Sample mean	5.00%	95.00%
Improvisational Capabilities ↔ Dynamic Capabilities	0.835	0.834	0.719	0.926
Organization Resilience ↔ Dynamic Capabilities	0.789	0.795	0.691	0.885
Organization Resilience ↔ Improvisational Capabilities	0.815	0.831	0.728	0.922

Note. $N = 75$

ports discriminant validity. These results are presented in [Table 4](#) for HTMT confidence intervals.

These findings and results supported Hypothesis 1, supporting the premise that dynamic and improvisational capabilities are distinct capabilities that may work together to enhance organizational resilience. As determining discriminant validity between Dynamic Capabilities and Improvisational Capabilities was the primary purpose of this study, no further statistics were conducted on this survey sample.

Discussion and Implications

The primary aim of this study was to establish empirical discriminant validity between dynamic and improvisational capabilities, and this research accomplished that goal. In this study, as recommended by established scholars (Hair et al., 2020, 2022; Henseler et al., 2015), the HTMT ratio was used as the primary criterion to establish discriminant validity, with secondary support by using the HTMT confidence intervals as a statistical test. The HTMT ratios for the constructs in the model were lower than the threshold value of 0.85, which demonstrated that the constructs captured distinct and different measures. The secondary analysis also revealed that none of the values in the HTMT confidence intervals were equal to one, which empirically supports discriminant validity.

Contributions to Theory

This study makes several important contributions to theory. The findings of this research found that dynamic and improvisational capabilities are conceptually and empirically distinct, which adds to the understanding of how the capabilities work uniquely and how they may also work together. Most existing research and literature on dynamic and improvisational capabilities (Eisenhardt & Martin, 2000; Pavlou & El Sawy, 2007, 2011; D. J. Teece et al., 1997; D. J. Teece & Pisano, 1994) have explored each capability separately. To the researcher's knowledge, this research is one of the first to examine these capabilities in the same study. By examining these capabilities together,

this research offers evidence that the capabilities are distinct and demonstrates that they may also be interdependent, extending existing research (Pavlou & El Sawy, 2010).

The findings of this research, discriminant validity between dynamic capabilities and improvisational capabilities, adds to the capability research and theory development in multiple ways. The findings suggest that dynamic capabilities and improvisational capabilities do not collapse into one generic construct, but rather this adaptation has at least two distinct pathways. Dynamic capabilities emphasize patterned, learned, and repeatable change processes (sensing, seizing, reconfiguring) while improvisational capabilities emphasize real-time recombination and action under time pressure and with novelty, often where prior routines are insufficient. The theoretical consequence is a differentiated capability landscape in which small businesses may be strong in dynamic capabilities while weaker (or stronger) in improvisational capabilities. Future capability theory should avoid equating capacity to change with dynamic capabilities alone.

Additionally, determining discriminant validity prescribes that boundary conditions become theoretically mandatory, not optional. Future capability theory development must specify environmental and temporal contingencies rather than assuming one best adaptive capability. For example, under high novelty and time compression, improvisational capabilities should outperform dynamic capabilities because dynamic capabilities' routines can be too slow or too reliant on recognizable patterns. Under moderate dynamism and repeated turbulence, dynamic capabilities may outperform improvisational capabilities because routines, reconfiguration and learning dominate.

Finally, discriminant validity warrants the expectations that dynamic capabilities and improvisational capabilities should have different nomological networks. The theoretical implications is that capability theory should begin treating capability constructs as families with distinct antecedent profiles. For example, dynamic capabilities are more likely to align with strategic planning, absorptive capacity, integrative mechanisms and managerial orchestra-

tion. On the other hand, improvisational capabilities are more likely to align with autonomy, decentralized decision making, team diversity, bricolage orientation and an improvisational culture.

This study also offers a context by examining small businesses, those with fewer than 500 employees, for executing these complementary but distinct capabilities. This research also builds on the development of a theoretical scale for measuring organizational improvisational capabilities (Kung & Kung, 2019) and will contribute to prior research (Cunha et al., 2017; Pavlou & El Sawy, 2010) and build cumulative knowledge about improvisational capabilities, specifically within small businesses.

Contributions to Practice

These findings will lead to a better understanding of improvisational capabilities and their relationship to dynamic capabilities, giving managers more tools to gain a competitive advantage. This research contributes to prior findings that organizations can purposefully cultivate improvisation as a managerial capability and that improvisation may be used as an organizational strategy (Crossan, 1998; Crossan et al., 1996), especially in the small business landscape.

Consistent with Karl Weick's (1998) argument that organizations can benefit from spontaneous action, small business leaders can deliberately create conditions that promote "thinking on your feet" (K. E. Weick, 1998, p. 552) without sacrificing strategic discipline. In practice this may be designing environments where experimentation is encouraged but within specific strategic boundaries. Managers and leaders can accomplish this by identifying non-negotiable priorities or goals such as customer satisfaction, financial constraints, or regulatory compliance, while giving employees autonomy in how goals are achieved during nonroutine events. This approach preserves investments in dynamic capabilities while also embracing improvisational action when they become applicable or necessary.

Improvisational capability can also be embedded through low-cost, high-impact training interventions well suited to small businesses with limited resources. Training programs should emphasize emotional intelligence, communication, and collaboration skills (Mannucci et al., 2021) as these skills will enable employees to coordinate and communicate in real time when formal routines may break down. Managers can further reinforce improvisational competence by incorporating scenario-based exercises, simulations and after-action debriefs to train employees to deal with nonroutine events confidently, maintain the pace and tempo that others are extemporaneously creating, and develop an awareness of existing resources and materials on hand for innovation and reconfiguration (K. E. Weick, 1998). This type of practice-based learning strengthens improvisation without requiring large-scale structural change (Crossan, 1998). Improvisation is not a substitute for planning, instead, it should be treated as a practical bridge between disruption and deliberate adaptation.

Most importantly, cultivating an improvisational culture does not require abandoning investments in dynamic capabilities. Instead, managers and leaders should view dy-

namic capabilities as providing the infrastructure that makes improvisation effective rather than chaotic. This research supports previous research that a comprehensive strategic approach (R. I. Williams Jr. et al., 2018), rather than relying on one strategy, can improve overall small business outcomes. Organizations should invest in basic dynamic capabilities to become more improvisational and resilient. Although creating dynamic capabilities is usually a long-term outlay of resources, at a minimum, it should include investments in technology, communication, and training to enhance an organization's ability to improvise when necessary. This research demonstrates that improvisational capabilities may provide an alternate approach to pre-planning and large investments for creating resilience and responding to unexpected events. For small business practitioners, the key takeaway is that the most resilient organizations are not those that plan for every contingency, but those that invest in enough in their structure and employees to enable their employees to improvise effectively when plans inevitable fail.

Research Limitations and Future Research

While this study provides several contributions, as with any research, it also has several limitations that should be addressed. The data collected came from a small sample ($N=75$), which provided a limited perspective and rigor, and larger sample sizes should be used in any future research. Future iterations of this research should include a larger dataset, a broader sampling of businesses of varying sizes and industries, and confirmatory factor analysis.

As mentioned, this research primarily focused on organizations with fewer than 500 employees. Future research should be expanded to target small organizations within specific ranges in size (i.e., those with less than 10 employees; those with 11-25, those with 25-49, etc.) to see if the same results hold or change. Additionally, to adequately test the relationship between dynamic capabilities and improvisational capabilities, such as the concept of mediation, and to adequately capture the nuances of improvisation, longitudinal or time-separated studies should be employed. If future research demonstrates that dynamic and improvisational capabilities are necessary for organizational resilience, this could mean a significant shift in how organizations approach crisis management in the short and long term. An expanded arsenal of tools, such as long-term planning and business development, combined with improvisation, could allow small enterprises to adapt more quickly to the changing environment, especially during crises.

Another limitation was the static nature and the cross-sectional gathering of data. The process model framing did not require longitudinal data to be theoretically valuable because cross-sectional models can capture relative strength of improvisational capabilities and dynamic capabilities as predictors of resilience outcomes. The process logic explains why both capabilities matter, even when measured at a single point in time. However, improvisation is challenging to study because it is a process (Cunha et al., 2017) that may happen spontaneously or cascade incre-

mentally over time (Abrantes et al., 2021). Examining improvisation longitudinally is important in future study design. Future research in this area should focus on studying phases (O'Toole et al., 2021), degrees (Suarez & Montes, 2019; K. E. Weick, 1998), or improvisation sequences over time. Another challenge of studying improvisation and resilience in the context of crisis management is capturing data in the midst of a crisis or turbulent event that may trigger improvisation. Studying improvisation longitudinally may also help address this challenge and better capture an organization's response to a crisis.

Another area that merits further exploration is the role of leaders in organizational improvisation and organizational resilience. Future studies on improvisational capabilities should include the moderating role of leadership style in mediating relationships. Preliminary research has proposed that some leadership styles, such as servant leadership and empowering leadership, may be well-suited to developing improvisational capabilities and organizational resilience (Abrantes et al., 2022; Crossan et al., 1996;

Cunha et al., 1999; Srivastava et al., 2006). A future study design could focus on substantiating that these roles and their associated tasks truly support organizational improvisation, and which leadership styles they align with most.

Conclusion

This research established that there are distinct differences between dynamic and improvisational capabilities and that these capabilities may work interdependently, contributing to the theoretical development of capabilities research. This study provides compelling evidence that dynamic and improvisational capabilities are distinct but complementary, and both may be necessary for organizations to thrive and gain a competitive advantage. These findings are particularly compelling for small businesses when building organizational resilience.

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