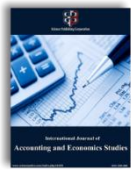
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Research paper



Environmental Turbulence, Dynamic Capabilities Organizational Resilience and Business Sustainability of Microbusinesses in San Pascual, Batangas, Philippines

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Abstract

Microbusinesses serve as vital catalysts for local economic growth, employment generation, and equitable income distribution. Despite their critical role, they often face persistent challenges stemming from environmental turbulence, limited dynamic capabilities, and threats to long-term sustainability. In San Pascual, Batangas, these enterprises operate within a volatile economic landscape influenced by shifting market demand, evolving regulations, and external shocks that disrupt operations and impede stability.

This study explored the relationships among environmental turbulence, dynamic capabilities, organizational resilience, and business sustainability among microbusinesses in the municipality. Employing a descriptive-correlational design, data were collected from 106 microbusiness owners. Findings revealed that most enterprises had been operating for one to three years and employed one to three workers, underscoring their small-scale nature and limited employment capacity. The majority were engaged in merchandising, with average monthly profits ranging from PHP 10,001 to PHP 15,000, indicating modest yet meaningful contributions to household income and local economic activity.

Results showed no significant differences in respondents' assessments of the main variables when grouped by years of operation or number of employees. However, perceptions of environmental turbulence varied significantly by business type and income level, suggesting uneven impacts of external disruptions. Moreover, organizational resilience was found to mediate the relationship between dynamic capabilities and business sustainability, highlighting the importance of adaptability and internal strength in sustaining long-term operations. Conversely, dynamic capabilities did not mediate the link between environmental turbulence and resilience, implying that external shocks may override internal competencies.

The study recommends implementing extension programs to enhance microbusiness resilience through improved financial access, training in sustainable business practices, and the adoption of modern management tools. Strengthening the adaptive capacity of microenterprises is essential for maintaining local employment, ensuring supply chain continuity, and fostering inclusive and sustainable economic development.

Keywords: *Environmental Turbulence; Dynamic Capabilities; Organizational Resilience; Business Sustainability; Proposed Extension Program.*

1. Introduction

Organizations worldwide have recognized resilience as a critical capability, especially in navigating crises. Resilient organizations take preventive measures to avoid becoming overburdened during times of need, such as creating continuity plans or training staff to handle calamities. Organizational resilience refers to the ability of an organization to foresee, respond, absorb, and recover from disturbances without compromising its core mission, values, and integrity. It involves establishing robust systems, fostering resilient cultures, and developing adaptive solutions to effectively navigate adversity. In recent years, resilience has become a particularly significant attribute for manufacturing companies and businesses facing global disruptions, including the COVID-19 pandemic. Enterprises with high resilience are better equipped to manage crises, resist decline, respond to opportunities, and continue operations under challenging circumstances. Micro, small, and medium-sized enterprises (MSMEs) have been identified as particularly vulnerable to such disruptions due to limited financial and managerial resources and heavy reliance on routine transactions and a small customer base (Bartik et al., 2020).

In the Philippines, the importance of organizational resilience has been amplified during the COVID-19 pandemic, particularly for microbusinesses. Resilient micro businesses are able not only to survive crises but also to respond and adapt to changing circumstances, predicting and adjusting to disruptions while even developing new skills to thrive in dynamic situations (Ilagan, 2025). The Department of Trade

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and Industry (DTI) has promoted resilience among micro, small, and medium enterprises (MSMEs) through policies such as Republic Act No. 9178, also known as the Barangay Micro Business Enterprise (BMBE) Act. Enacted in 2002, the BMBE Act integrated microbusinesses into the informal and mainstream economies and provided incentives, including income tax exemptions, relief from minimum wage laws, and special credit priority windows to support financing requirements (Aldaba, 2018). These measures aim to strengthen the capacity of MSMEs to survive and recover from environmental disruptions.

At the local and micro-scale level, many microenterprises remain unprepared for sudden disruptions, making them highly susceptible to environmental and market volatility. Building organizational resilience locally entails cultivating agility, robustness, and integrity, which enable enterprises to reestablish themselves after setbacks. For Philippine microbusinesses, developing such capabilities can significantly enhance survival during calamities and ensure consistent long-term operations (Ilagan, 2025). Firms that actively foster resilience are not only able to absorb shocks but also to adjust operations, create new routines, and capitalize on opportunities, demonstrating that resilience is both a protective mechanism and a driver of sustained growth in the local business landscape.

While organizational resilience has been widely recognized as essential for navigating crises, most studies focus on large firms or manufacturing enterprises, with limited attention to microbusinesses and MSMEs at the local level in the Philippines. Existing research highlights the vulnerability of MSMEs due to limited resources (Bartik et al., 2020) and acknowledges government support such as the BMBE Act (Aldaba, 2018). However, there is insufficient empirical evidence on how local microbusinesses develop and apply organizational resilience in practice, especially in responding to sudden disruptions like the COVID-19 pandemic. Furthermore, while resilience is often discussed conceptually, few studies examine the specific mechanisms, processes, or capabilities that enable Philippine MSMEs to absorb shocks, adapt operations, and sustain long-term growth. This gap underscores the need for research that explores resilience at the micro-scale, linking theory to actionable strategies that strengthen MSMEs' capacity to survive, adapt, and thrive in dynamic and uncertain environments.

2. Objectives

The study assessed the organizational resilience and business sustainability of microbusinesses in San Pascual, Batangas. Specifically, it sought to answer the following questions:

1) What is the profile of microbusiness in terms of:
- number of years in operation;
- number of employees;
- type of microbusiness; and
- average monthly profit?
2) How may the microbusiness in San Pascual, Batangas, be assessed in terms of?
- environmental turbulence;
- dynamic capabilities;
- organizational resilience; and
- business sustainability?
3) Is there a significant difference in the responses when grouped according to profile?
4) Do dynamic capabilities significantly affect business sustainability?
5) Does organizational resilience mediate the effect of dynamic capabilities on business sustainability?
6) Does environmental turbulence significantly affect organizational resilience?
7) Do dynamic capabilities mediate the effect of environmental turbulence on organizational resilience?
8) Based on the findings, what output may be proposed?

2.1. Hypotheses of the study

This study tested the hypotheses below:

Ho_1: There is no significant difference among the respondents when grouped according to profile.
Ho_2: There is no significant relationship between organizational resilience and business sustainability.
Ho_3: Dynamic capabilities do not significantly affect business sustainability.
Ho_4: Organizational resilience does not significantly mediate the effect of dynamic capabilities on business sustainability.
Ho_5: Environmental turbulence does not significantly affect organizational resilience.
Ho_6: Dynamic capabilities do not mediate the effect of environmental turbulence on organizational resilience.

2.2. Literature review

Adapting and thriving in uncertain environments is a key challenge for MSMEs, especially in emerging economies. Dynamic capabilities, wherein the ability to sense opportunities, seize innovations, and reconfigure resources play a central role in building organizational resilience. This literature review examines three themes: the effects of environmental turbulence on MSMEs, the foundations of dynamic capabilities, and factors shaping SME resilience, providing insight into how firms strengthen their adaptive capacity and sustain performance amid uncertainty.

2.3. Environmental turbulence in MSMEs

Environmental turbulence is a critical driver of capability development, especially for MSMEs facing uncertainty, rapid technological changes, or volatile markets. Hamsal, Ichsan, & Wicaksono (2023) and Maleki Far et al. (2023) highlight that turbulence compels firms to build dynamic capabilities to respond effectively to external shocks. Similarly, studies on SMEs during crises, such as Bartik et al. (2020) and Ozanne et al. (2022), show that firms that adapt to environmental turbulence through dynamic capabilities improve their resilience and sustain performance under challenging conditions.

2.4. Dynamic capabilities theory

Dynamic capabilities serve as the mechanisms through which firms sense, seize, and reconfigure resources to respond to environmental changes. Heubeck (2023) emphasizes that managerial capabilities are central to navigating volatile contexts. Mikalef & Pateli (2023) demonstrate that digital transformation leverages dynamic capabilities to enable organizational adaptation in turbulent environments. Duchek (2020) frames resilience as a capability-based construct, showing that dynamic capabilities underpin the processes of anticipation, coping, and adaptation. These insights support the regression findings, highlighting the practical significance of dynamic capabilities in building resilience.

2.5. MSMEs' resilience in emerging economies

In emerging economies, MSMEs often operate with limited resources under uncertain market conditions. Research indicates that dynamic capabilities enhance resilience by promoting adaptability, innovation, and strategic agility. Akpan, Johnny, & Sylva (2021), De Vera & Balaria (2023), and Valenzuela, Jacobo-Hernandez, & Flores-López (2023) show that resilient SMEs are better able to respond to shocks, maintain continuity, and improve long-term performance. Similarly, Aldaba (2018) highlights that developing capabilities in entrepreneurial ecosystems supports resilience and economic transformation in resource-constrained contexts.
These studies provide valuable insights that have significantly contributed to enhancing and improving this research.

3. Materials and Methods

The main objective of this research is to assess the environmental turbulence, dynamic capabilities, organizational resilience, and business sustainability of microbusinesses in San Pascual, Batangas. It utilized a descriptive-correlation research design to examine the relationship between these variables. Additionally, the researcher employed a quantitative research design in conducting this study. According to Jain (2023), a quantitative research design is a research method that aims to collect data and analyze numerical data to answer research questions and test hypotheses. This method helped the researcher to generalize the findings to larger populations and use statistical analysis and hypothesis testing to uncover patterns and relationships in the variables used in this study.
The descriptive-correlation design is a research approach that aims to describe and explore the relationship between variables without making causal claims. According to Creswell, J.W. & Creswell, J.D. (2018), descriptive-correlation design is a research design that involves collecting data to describe variables and explore the relationship between them without inferring causality.
In addition, since the questionnaire was specifically developed for this study, several procedures were undertaken to ensure its validity and reliability. The initial draft was reviewed by the research adviser, whose comments guided the first round of revisions. The revised instrument was then evaluated by three panel members, who assessed each item for clarity, relevance, and alignment with the study's variables. Their feedback further strengthened and refined the questionnaire. After incorporating all recommendations, a pilot test was conducted with 30 respondents who were not part of the main sample. The reliability of the instrument was measured using Cronbach's alpha, yielding values of 0.911 for environmental turbulence, 0.882 for dynamic capabilities, 0.865 for organizational resilience, and 0.909 for business sustainability. These results indicate strong internal consistency and confirm that the instrument is suitable for full implementation in the study. The researcher proceeded with relevant statistical techniques to examine the data and evaluate the magnitude and direction of the relationships across the variables.

3.1. Respondents of the study

The respondents of the study are those owners of micro businesses. The total population of 145 microbusinesses in San Pascual, Batangas. Using the Raosoft sample size calculator, a sample size of 106 respondents was determined with a 5% margin of error and a 95% confidence level.

3.2. Data gathering instrument

A researcher-made questionnaire was used as the primary tool for gathering information needed in the study. The criterion used in the survey questionnaire is lifted and based on the literature of various studies that are related to this study. The questionnaire was divided into two parts. Part 1 focused on the profile of the microbusinesses, while Part 2 is all about the assessment of the microbusinesses with 10 items in each sub-variable.
The questionnaire is designed in such a way that the respondents find it easy to provide the researcher with their answers by using a checklist format and the Likert scale. The researcher was ensuring that the characteristics of a good questionnaire were attained.
The scale in this table was used in assessing microbusinesses in San Pascual, Batangas, in terms of environmental turbulence, dynamic capabilities, organizational resilience, and business sustainability. Table 1 shows the Likert scale used for the study. And a face-to-face distribution of the questionnaire was done through a systematic procedure.

Table 1: Scoring and Interpretation

Response	Scale Range	Categorical Response	Interpretation
4	3.50-4.00	Strongly Agree	Very High
3	2.5-3.49	Agree	High
2	1.5-2.49	Disagree	Low
1	1.00-1.49	Strongly Disagree	Very Low

3.3. Data gathering procedure

The researcher of this study created steps to be followed to have a systematic and scientific way of conducting the study. Upon the approval of the title, the researcher explored the possible ways to gather data that would support the study. The researcher consulted several references from different libraries and searched online e-books about the topic under study. Through the literature, the researcher can formulate the thesis problem. The resources became her basis for the selection of the variables of the study. In addition, the researcher has read and studied the questionnaires from the different research related to the present study. These served as the researchers' guide in the preparation

of the personal data sheet as well as in the selection of standardized questionnaires to assess the environmental turbulence, dynamic capabilities, organizational resilience, and business sustainability of microbusiness owners in San Pascual, Batangas.
To ensure proper selection of respondents without bias, the researcher used a randomizer to identify the respondents. Before the conduct of the survey, the researcher first used the wheel of names method. In the conduct of the survey, the researcher encountered refusal because the microbusiness owner was not present. And they are only visited once a month in the store. Due to the time constraints on her survey, the researcher selected a different name using the wheel of names once more. The questionnaire was distributed to the qualified respondents of the study. Upon data gathering, the researcher assisted the respondents when needed and asked. The data collected was tallied, then analyzed and interpreted by the researcher.

4. Results and Discussions

Table 2 presents a summary of the profile of the respondents, highlighting the highest frequencies in terms of years in operation, number of employees, types of microbusinesses, and average monthly profit. Based on the data presented in the table, microbusinesses have been in operation for approximately one to three years, generally employ one to three individuals, are predominantly involved in merchandising activities, and report an average monthly profit ranging from Php 10,001 to Php 15,000.
The findings proved that most microbusinesses in San Pascual, Batangas, often have lower expenses due to employing fewer people, which can support profitability if they maintain steady revenue and manage other costs well. This claim found support in the article by Griswold, D. (2025) that microbusinesses require little start-up capital and have low operating costs. This is because they frequently work with a small staff, sometimes as few as one or two, and might not need to make large investments in inventory or physical infrastructure.

Table 2: Profile of the Microbusinesses

Profile	Frequency	Percentage
Number of years in operation: 1-3 years	50	47.17
Number of employees 1-3	82	77.36
Types of microbusinesses: Merchandising	43	40.57
Average monthly profit Php10,001-Php15,000	30	28.30

Meanwhile, Table 3 summarizes the composite mean scores of environmental turbulence, dynamic capabilities, organizational resilience, and business sustainability. Overall, microbusinesses in San Pascual, Batangas perform exceptionally well across these areas. They demonstrate flexibility in responding to changing regulations, economic challenges, and market fluctuations. Their dynamic capabilities enable them to identify opportunities and risks, capitalize on emerging trends, and reorganize resources effectively. High organizational resilience allows them to recover from shocks and continue operations, leveraging community networks when needed. Additionally, these microbusinesses emphasize business sustainability through ethical practices, efficient resource use, and support for local development. Collectively, these strengths indicate that local microbusinesses are not only surviving but are also positioning themselves for long-term growth and sustainability.
Although Table 3 shows “High” scores for both environmental turbulence and business sustainability, this does not imply a contradiction. Instead, it suggests that microbusinesses are able to maintain high sustainability outcomes despite operating in turbulent environments, reflecting their resilience and adaptive capacity. This ability is largely driven by dynamic capabilities, as these firms can sense changes, seize emerging opportunities, and reconfigure resources effectively, enabling them to sustain operations and thrive even under challenging and unpredictable conditions.
This claim found support in the study by Valenzuela et.al. (2023) that dynamic capabilities influence organizational resilience and the extent to which they have varying effects. This allows for the determination of assumptions through which dynamic capabilities enable organizations to thrive in a specific market. The findings help establish the relevance of dynamic capabilities in organizations to achieve resilient market survival. Specifically, the dynamic capability of innovation emerges as the most crucial factor in terms of resilience and has the greatest impact on the longevity of companies in the market.

Table 3: Summary of the Composite Mean

Microbusinesses’	Composite Mean	Interpretation
Environmental Turbulence	3.26	High
Dynamic Capabilities	3.30	High
Organizational Resilience	3.28	High
Business Sustainability	3.30	High

Table 4 presents the differences in microbusiness assessments based on profile. Results show that years in operation do not significantly affect environmental turbulence, dynamic capabilities, organizational resilience, or business sustainability. This indicates that whether a microenterprise has been operating for a short or long period, its experience of external challenges, internal capabilities, resilience, and sustainability outcomes remains statistically similar. In other words, business longevity alone does not necessarily enhance adaptive capacity or sustainability performance, especially for resource-constrained microbusinesses in volatile environments. This aligns with Martins et al. (2022), who found that firm age is not consistently a significant factor in sustainability outcomes, with leadership, access to finance, and training playing a more critical role.
Moreover, Table 4 also shows that the number of employees does not significantly affect environmental turbulence, dynamic capabilities, organizational resilience, or business sustainability. This suggests that workforce size, whether small or relatively larger within the microenterprise range, does not substantially influence how businesses perceive or respond to external shocks, manage internal capabilities, build resilience, or maintain sustainability.
This result suggests that simply having more employees does not inherently improve a microbusiness’s ability to cope with external changes or enhance its long-term sustainability. In the context of microbusinesses, where resources are often constrained and management is centralized in the owner, the number of employees may not meaningfully contribute to strategic flexibility or organizational learning, which are critical to resilience and sustainability. This finding is supported by Dijkman et al. (2021), who pointed out that digitalization and capability development, not workforce size, are key drivers of sustainability for small and micro-enterprises. Without intentional investment in such areas, the number of employees becomes a passive resource, not a driver of resilience.

Table 4: Difference in the Microbusinesses' Assessment When Grouped According to Profile

Profile	Variables	Interpretation
Number of years in operation	Environmental Turbulence	Not significant
	Dynamic Capabilities	Not significant
	Organizational Resilience	Not significant
	Business Sustainability	Not significant
Number of employees	Environmental Turbulence	Not significant
	Dynamic Capabilities	Not significant
	Organizational Resilience	Not significant
	Business Sustainability	Not significant
Types of microbusinesses	Environmental Turbulence	Significant
	Dynamic Capabilities	Not significant
	Organizational Resilience	Not significant
	Business Sustainability	Not significant
Average Monthly Profit	Environmental Turbulence	Significant
	Dynamic Capabilities	Not significant
	Organizational Resilience	Not significant
	Business Sustainability	Not significant

Meanwhile, Table 5 shows the effect of dynamic capabilities on business sustainability. It presents the results of a simple and multiple linear regression conducted to determine the effect of the dynamic capabilities on business sustainability. The regression results show that dynamic capabilities have a strong and meaningful impact on business sustainability. Specifically, a one-unit increase in dynamic capabilities nearly translates to a full-unit increase in business sustainability, highlighting that this relationship is not just statistically significant but also practically important. This aligns with research by Ozanne et al. (2022), which found that small and medium enterprises that effectively sense changes, reconfigure resources, and leverage social capital are better able to adapt, innovate, and maintain operations during crises. In other words, dynamic capabilities help firms not only survive disruptions but also achieve sustainable performance over time. It is important to note, however, that these findings reflect the specific context of the study, and other factors such as leadership, financing, market conditions, or regulatory support may also affect sustainability. Future research could explore these additional influences to gain a fuller understanding of how dynamic capabilities drive long-term business success.

Table 5: Effect of Dynamic Capabilities on Business Sustainability

Business Sustainability	B	Std. Error	t-value	p-value	Decision on H_o	Interpretation
Constant	0.371	0.186	1.998	0.048	Reject	Significant
Dynamic Capabilities	0.889	0.056	15.909	<0.001	Reject	Significant

Model Summary: $R = 0.842$; $R^2 = 0.709$.
Regression Model: $F = 253.093$; $p = <0.001$.

Table 6 shows that organizational resilience significantly affects dynamic capabilities. The regression results show that dynamic capabilities have a strong and meaningful impact on organizational resilience ($B = 0.824$, $p < 0.001$), with the constant also significant ($B = 0.556$, $p = 0.004$). Specifically, a one-unit increase in dynamic capabilities leads to nearly a 0.82-unit increase in resilience, highlighting that this effect is not only statistically significant but also practically important. This aligns with the findings of Akpan et al. (2021), who noted that organizations capable of sensing changes, seizing opportunities, and reconfiguring resources are better able to withstand disruptions and maintain performance during challenging times. In practice, this means that firms with strong dynamic capabilities are more adaptable, able to absorb shocks, and can continue operating effectively even in uncertain environments. Building these capabilities is therefore essential for organizations that aim to remain resilient and thrive despite external challenges.

Table 6: Mediation of Organizational Resilience to the Effect of Dynamic Capabilities on Business Sustainability

Organizational Resilience	B	Std. Error	t-value	p-value	Decision on H_o	Interpretation
Constant	0.556	0.191	2.910	0.004	Reject	Significant
Dynamic Capabilities	0.824	0.058	14.321	<0.001	Reject	Significant Effect

Model Summary: $R = 0.815$; $R^2 = 0.664$.
Regression Model: $F = 205.080$; $p = <0.001$.

Meanwhile, Table 7 presents that environmental turbulence has a significant effect on organizational resilience. The regression results show that organizational resilience has a strong and meaningful effect on managing environmental turbulence ($B = 0.825$, $p < 0.001$), with the constant also significant ($B = 0.599$, $p = 0.005$). A one-unit increase in resilience corresponds to a 0.825-unit improvement in navigating turbulence, highlighting its practical importance beyond statistical significance. This supports Hamsal et al. (2023), who emphasized that resilient organizations can anticipate disruptions, respond proactively, and recover quickly. Firms with strong resilience are better able to adjust strategies, maintain operations, and sustain performance even amid external volatility, demonstrating the critical role of resilience in organizational continuity.

Table 7: Effect of Environmental Turbulence on Organizational Resilience

Environmental Turbulence	B	Std. Error	t-value	p-value	Decision on H_o	Interpretation
Constant	0.599	0.206	2.902	0.005	Reject	Significant
Organization Resilience	0.825	0.063	13.193	<0.001	Reject	Significant Effect

Model Summary: $R = 0.791$; $R^2 = 0.626$.
Regression Model: $F = 174.057$; $p = <0.001$.

On the other hand, the mediation in Table 8 showed that both environmental turbulence and organizational resilience meaningfully shape an organization's dynamic capabilities. Hence, environmental turbulence has a strong effect ($B = 0.619$), indicating that when the environment becomes more unstable, organizations significantly strengthen their ability to sense changes and adapt. This supports Duchek (2020), who explained that exposure to challenges pushes organizations to develop the adaptive processes that underlie resilience and capability-building.

Meanwhile, organizational resilience also shows a moderate but important effect (B = 0.327), meaning that organizations that can anticipate, cope, and adapt tend to build stronger dynamic capabilities. This suggests a partial mediation, where turbulence not only directly boosts dynamic capabilities but also works through resilience to enhance them further. Overall, the findings highlight that resilience helps translate environmental pressures into stronger adaptive capabilities, aligning with Duchek's view of resilience as a dynamic, developmental process.

Table 8: Mediation of Dynamic Capabilities on the Effect of Environmental Turbulence and Organizational Resilience

Dynamic Capabilities	B	Std. Error	t-value	p-value	Decision on H_o	Interpretation
Constant	0.189	0.183	1.035	0.030	Reject	Significant
Environmental Turbulence	0.619	0.091	6.797	<0.001	Reject	Significant
Organization Resilience	0.327	0.090	3.630	<0.001	Reject	Significant

Model Summary: R = 0.861; R^2 = 0.742 Regression Model: F = 147.949; p = <0.001.

The regression results in Table 9 show that environmental turbulence has a statistically significant practical effect on organizational resilience. With a coefficient of B = 0.431, the effect size is moderate but substantial, indicating that as environmental turbulence increases, organizations tend to strengthen their resilience capabilities. The strong t-value (5.198) reinforces the robustness of this effect. This aligns with Linnenluecke (2017), who emphasized that resilience is shaped by an organization's exposure to disruptions and its ability to adapt, learn, and maintain function in volatile environments.

On the other hand, the significant constant term (B = 1.872) suggests that organizations possess a baseline level of resilience even without external pressures, but the presence of turbulence meaningfully elevates this resilience. Consistent with Linnenluecke's claim that resilience develops through continuous interaction with dynamic environments, the findings show that turbulence acts as a driver that enhances adaptive capacity, supporting both the statistical and practical significance of the relationship.

Table 9: Effect of Environmental Turbulence on Organizational Resilience

Organizational Resilience	B	Std. Error	t-value	p-value	Decision on H_o	Interpretation
Constant	1.872	0.272	6.873	<0.001	Reject	Significant
Environmental Turbulence	0.431	0.083	5.198	<0.001	Reject	Significant Effect

Model Summary: R = 0.454; R^2 = 0.206.
Regression Model: F = 27.018; p = <0.001.

Meanwhile, the regression analysis in Table 10 shows that environmental turbulence has a strong and positive effect on dynamic capabilities (B = 0.513). This coefficient size indicates a moderately large practical impact, meaning that firms facing rapid changes, uncertainty, or market instability tend to sharpen their ability to sense opportunities, seize innovations, and reconfigure resources. The high t-value (6.663) reinforces that this effect is both statistically and practically important.

These findings echo existing research. Heubeck (2023) emphasized that dynamic managerial capabilities help organizations navigate volatile environments. Maleki Far et al. (2023) similarly showed that SMEs exposed to turbulence improve their innovation performance through stronger dynamic capabilities. Mikalef and Pateli (2023) found that digital transformation allows firms to better sense and seize opportunities during uncertain conditions. Shamim et al. (2022) added that learning and digital integration further strengthen these capabilities, enhancing long-term resilience.

Overall, the results confirm that environmental turbulence is not just a challenge; it actively drives the development of dynamic capabilities, which then contribute meaningfully to organizational resilience. The effect sizes observed in the regression support this practical significance beyond the p-values alone.

Table 10: Dynamic Capabilities on Environmental Turbulence

Dynamic Capabilities	B	Std. Error	t-value	p-value	Decision on H_o	Interpretation
Constant	1.627	0.253	6.437	<0.001	Reject	Significant
Environmental Turbulence	0.513	0.077	6.663	<0.001	Reject	Significant Effect

Model Summary: R = 0.547; R^2 = 0.299.
Regression Model: F = 44.395; p = <0.001.

The regression results in Table 11 indicate that dynamic capabilities have a strong and significant effect on organizational resilience. The coefficient of B = 0.824 reflects a large effect size, suggesting that organizations that actively develop dynamic capabilities such as sensing opportunities, seizing innovations, and reconfiguring resources experience a substantial improvement in their resilience. This emphasizes that the relationship is not only statistically significant ($p < 0.001$) but also practically meaningful, demonstrating the real-world impact of dynamic capabilities on organizational adaptability. Moreover, the significant constant (B = 0.556, p = 0.004) suggests that organizations have a baseline level of resilience even without dynamic capabilities, but the presence and strengthening of these capabilities clearly enhance resilience.

These findings are supported by recent literature. Heubeck (2023) highlights that dynamic managerial capabilities are essential for firms to respond effectively to volatile and complex environments. Mikalef and Pateli (2023) note that firms leveraging dynamic capabilities in turbulent contexts can sense and seize opportunities more effectively, resulting in superior adaptive performance. Similarly, Hosseini et al. (2022) emphasize that dynamic capabilities support organizational learning and adaptation, which are critical for maintaining resilience in the face of rapid technological, market, and environmental changes. In summary, the results underscore that investing in dynamic capabilities is a powerful strategy for building organizational resilience, with effect sizes confirming its practical importance beyond mere statistical significance.

Table 11: Organizational Resilience on Dynamic Capabilities

Organizational Resilience	B	Std. Error	t-value	p-value	Decision on H_o	Interpretation
Constant	0.556	0.191	2.910	0.004	Reject	Significant
Dynamic Capabilities	0.824	0.058	14.321	<0.001	Reject	Significant Effect

Model Summary: R = 0.815; R^2 = 0.664.
Regression Model: F = 205.080; p = <0.001.

The results in Table 12 indicate that dynamic capabilities significantly predict organizational resilience with a p-value of < .001, while environmental turbulence has no direct significant effect with a p-value of 0.858. This pattern suggests the presence of a mediation effect,

where dynamic capabilities act as the intervening variable through which environmental turbulence indirectly influences organizational resilience. In other words, turbulence alone does not directly enhance resilience, but it stimulates organizations to develop dynamic capabilities such as adaptability, innovation, and resource reconfiguration, which in turn strengthen their resilience. This implies that resilience is achieved not by the external environment itself, but through internal strategic responses built upon dynamic capabilities. The Dynamic Capabilities Theory posits that firms are capable of dynamic capabilities, which is the ability to sense external changes, seize emerging opportunities, and reconfigure organizational resources are better equipped to handle volatility and maintain competitive advantage (Teece et al., 1997; Pavlou & El Sawy, 2011). In line with this, empirical evidence shows that dynamic capabilities significantly predict organizational resilience among small and medium enterprises (SMEs) operating under turbulent conditions (García-Valenzuela et al., 2023).

Further, recent studies provide similar evidence of mediation effects in turbulent environments. De Vera and Balaria (2023) found that SMEs in Batangas improved post-pandemic resilience through the mediating role of dynamic and digital capabilities. Laguador et al. (2022) also noted that dynamic capabilities bridge the link between innovation and performance among higher education institutions, allowing them to adapt to rapid change. Likewise, Javier et al. (2023) emphasized that adaptive leadership and strategic flexibility, as the core aspects of dynamic capabilities, enable enterprises to transform external pressures into opportunities for growth. Collectively, these findings support that in the Philippine context, dynamic capabilities serve as the key mediating mechanism that translates environmental turbulence into sustainable organizational resilience.

Table 12: Mediating Role of Dynamic Capabilities on the Effect of Environmental Turbulence on Organizational Resilience

Organizational Resilience	B	Std. Error	t-value	p-value	Decision on H_o	Interpretation
Constant	0.541	0.211	2.568	0.012	Reject	Significant
Environmental Turbulence	0.012	0.065	0.179	0.858	Failed to Reject	No Significant Effect
Dynamic Capabilities	0.818	0.069	11.835	<0.001	Reject	Significant Effect

4.1. Proposed extension program

Based on the findings that dynamic capabilities strengthen organizational resilience, the proposed extension program aims to help local businesses, especially SMEs, become more adaptive and innovative. The program will focus on developing skills in sensing market changes, seizing opportunities, and reorganizing resources to stay resilient in uncertain conditions. Therefore, interventions aimed at improving MSME resilience should prioritize the development of these dynamic capabilities, ensuring that business owners can anticipate changes, respond effectively, and adapt operations under challenging conditions.

Furthermore, LGU-level policies and the Barangay Microbusiness Enterprise (BMBE) incentives under RA 9178 provide critical support by offering financial assistance, tax exemptions, and technical guidance. These measures help microbusinesses overcome resource constraints, complementing the development of dynamic capabilities and enabling firms to implement adaptive strategies. Collectively, the findings and policy context highlight that combining capability-building programs with supportive local policies can enhance MSMEs' resilience, ensuring survival, adaptability, and long-term sustainability in dynamic environments.

Thus, the program will offer training sessions on digital transformation, innovation, and crisis management, in partnership with local universities, business groups, and government agencies like DTI. These activities will guide participants in applying practical strategies that improve flexibility, creativity, and long-term competitiveness.

Lastly, a monitoring system will be set up to track progress and evaluate results. Regular mentoring and feedback will measure improvements in adaptability and resilience. Overall, this extension program will help local enterprises build stronger dynamic capabilities and sustain growth despite environmental challenges.

5. Conclusions

1) Most of the microbusinesses have been operating for 1 to 3 years, employing 1 to 3 workers. The majority belong to the merchandising industry and earn an average monthly income ranging from ₱10,001 to ₱15,000.
2) The assessments of environmental turbulence, dynamic capabilities, organizational resilience, and business sustainability were all rated at a high level, indicating favorable conditions across these variables.
3) A significant difference was found in the respondents' assessment of environmental turbulence when grouped according to type of business and average monthly profit, but no significant differences were observed for the other variables. Conversely, there were no significant differences in the assessments of environmental turbulence, dynamic capabilities, organizational resilience, and business sustainability when grouped according to years of operation and number of employees.
4) Dynamic capabilities were found to have a significant positive effect on business sustainability, highlighting their importance in maintaining long-term performance.
5) Organizational resilience was identified as a mediating variable between dynamic capabilities and business sustainability, indicating that resilience strengthens the impact of capabilities on sustainable outcomes.
6) Environmental turbulence has a significant effect on organizational resilience, suggesting that exposure to uncertain conditions enhances firms' adaptability and strength.
7) Dynamic capabilities were found not to mediate the relationship between environmental turbulence and organizational resilience.
8) Based on these findings, an extension program was proposed to enhance the dynamic capabilities and resilience of microbusinesses, promoting their sustainability amid environmental challenges.

6. Recommendations

1) Microbusinesses are encouraged to actively participate in the proposed extension program to strengthen their dynamic capabilities, enhance organizational resilience, and promote long-term business sustainability.
2) Partnerships between microbusinesses, local academic institutions, and NGOs focusing on sustainable development may be established to provide technical assistance, research support, and resources that foster innovation and resilience-building initiatives.
3) Relevant government agencies and business organizations may develop or enhance local policies and community-based programs aimed at improving the resilience and sustainability of microbusinesses in San Pascual.

4) Microbusiness owners are encouraged to join local business associations or cooperatives that offer access to resources, networking opportunities, and business development programs, as these networks can provide valuable connections, mentorship, and peer support.
5) Future researchers may extend this study by including microbusinesses from other localities and industries to validate and expand the findings, thereby offering a broader understanding of how microbusinesses can thrive amid environmental and market challenges.

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