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Climate-Induced Entrepreneurial Resilience and Its Financial & Tax Implications for Gudeg SMEs in Yogyakarta

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ABSTRACT

Climate variability generates significant operational and financial pressures for traditional food-based SMEs in Indonesia, particularly for gudeg businesses in Yogyakarta that depend on young jackfruit as their primary raw material. This study examines how Perceived Climate Risk, Adaptation Strategies, and Climate-Adaptive Supply Chain Agility influence Entrepreneurial Resilience, while extending the discussion toward financial outcomes—specifically cost behaviour, liquidity stability, and tax compliance capacity. Using a quantitative approach with PLS-SEM, primary data were collected from gudeg SMEs across the Special Region of Yogyakarta. The results indicate that all three antecedents positively and significantly enhance entrepreneurial resilience, with Adaptation Strategies emerging as the strongest predictor. The structural model demonstrates high explanatory power ($R^2 = 0.622$; $Q^2 = 0.387$), confirming its predictive robustness. The novelty of this study lies in reframing entrepreneurial resilience as not only an adaptive capability to climate pressure but also a financial stabilizer that influences cost allocation, revenue fluctuation management, and tax obligation fulfilment. Resilient SMEs tend to maintain more consistent cashflow patterns, enabling better cost reporting accuracy, depreciation planning, and timely tax payments. These findings provide theoretical contributions to climate-informed accounting behaviour and practical insight for SMEs, accountants, and policymakers. The study suggests the integration of climate-based cost recognition and recommends tax incentives to support investment in adaptation technologies for vulnerable small enterprises.

Keywords: Entrepreneurial resilience, Climate risk, Adaptation strategies, Supply chain agility, Gudeg SMEs, PLS-SEM

INTRODUCTION

Climate-driven business vulnerability is not only an operational issue for SMEs, but also a financial-reporting, cost-structure, and taxation–compliance issue. As climate variability alters production cycles, price volatility, and input availability, financial planning becomes increasingly uncertain and taxation burdens may become more difficult to meet. Within Indonesia's traditional culinary sector—particularly gudeg SMEs in Yogyakarta—the instability of young jackfruit supply creates direct consequences on cost of goods sold (COGS), inventory turnover, taxable income, and the accuracy of business financial reporting. Climate

shocks therefore do not merely disrupt business operations, but indirectly influence accounting behaviour through income volatility and taxation uncertainty (UN Climate Change, 2021).

In the Special Region of Yogyakarta (DIY), gudeg vendors face quite specific climate challenges. One of the main raw materials for gudeg is young jackfruit, which is highly dependent on weather conditions such as the rainy season, humidity, and extreme rainfall, which can disrupt jackfruit production or supply. This instability in supply not only increases costs for vendors but also has the potential to disrupt business continuity (Kim & Tepe, 2025). In addition, sales are also affected by climate change: for example, when the weather is very hot or there is heavy rain, visits by buyers to gudeg carts or stalls can decrease dramatically, reducing daily income. This climate uncertainty requires gudeg traders to not only manage risk but also develop entrepreneurial resilience, which is the ability to adapt, absorb shocks, and recover from disruptions (Mondal et al., 2025). However, the literature on MSME resilience in Indonesia still focuses more on traditional factors such as capital, digitalisation, or financial risk management, and does not explore how perceptions of local climate risk drive concrete adaptation strategies. Recent quantitative research in Indonesia shows that awareness of climate change among small business owners tends to be low, but when it does exist, it can influence long-term business orientation.

The Special Region of Yogyakarta (DIY) represents a relevant real-world laboratory. Gudeg SMEs depend on seasonal agricultural products whose yields are climate-sensitive, making the business highly exposed to fluctuations in raw material cost, supply volume, and revenue cycles. These fluctuations shape financial statements, alter taxable profit estimates, and introduce discrepancies between planned and realised tax obligations. SMEs experiencing climate-induced instability often face difficulties maintaining consistent bookkeeping, tax filing accuracy, and compliance particularly when the business lacks formal accounting systems. Current MSME research in Indonesia predominantly explores digitalisation, financing, and marketing, but very few studies assess how climate risk influences accounting behaviour, tax exposure, and resilience capacity simultaneously.

Furthermore, the transformation towards greener businesses (green SMEs) is becoming an important issue on the national agenda. Institutions such as the Institute for Essential Services Reform (IESR) emphasise that the decarbonisation of MSMEs is not only an effort to mitigate emissions, but also part of a strategy to increase business resilience to climate impacts (Mehmood et al., 2025). In this context, gudeg vendors as micro-scale businesses have specific potential and needs to develop climate-based adaptation strategies that are appropriate to their local resources and business capacities.

The concept of entrepreneurial resilience, while widely discussed, rarely integrates financial compliance factors. When climate risk increases input cost or reduces sales volume, SMEs must make decisions involving cost restructuring, pricing, inventory management, and tax-reduction strategies. These decisions are directly linked to financial reporting and taxation practices yet academic evidence is limited. Meanwhile, tax policies for SMEs (PP 23/2018) operate on presumptive taxation over turnover, which means declining sales during extreme weather will influence tax payable, liquidity, and sustainability. Understanding these interactions is critical for policy reform and accounting research.

This research is very important because it offers theoretical and practical contributions. Theoretically, the research will add to the literature on entrepreneurial resilience by including the variables of local climate risk perception and small business adaptation strategies in the traditional culinary sector. Practically, the research results can provide policy recommendations and interventions for local stakeholders (the DIY government, trade office, cooperatives) to support gudeg vendors in building stronger adaptive capacities. By understanding how climate risks shape business strategies, interventions can be targeted to be more relevant and impactful.

Thus, the study of 'Climate-Informed Entrepreneurial Resilience' among gudeg vendors in DIY is highly relevant and urgent. This study not only fills a gap in the literature on climate-based resilience in traditional culinary MSMEs, but also provides a basis for local adaptation policies that can improve the economic resilience of small traders to future climate change. Therefore, this study aims not only to examine how climate risk, adaptation strategies, and supply chain agility enhance entrepreneurial resilience, but also to discuss the implications for cost efficiency, financial stability, and taxation accuracy among traditional food SMEs. Results are expected to contribute theoretically to climate-informed accounting behaviour and practically for taxation policy refinements supporting climate-vulnerable micro-enterprises in Indonesia.

LITERATURE REVIEW

Accounting and Taxation Implications of Climate Risk for SMEs

Climate change and extreme weather events affect a company's cash flow, asset value, liabilities, and operating performance with direct consequences for accounting measures such as cost of goods sold (COGS), inventory, asset impairment losses, and estimates of contingent liabilities. International accounting standards and guidelines for SMEs state that entities must consider climate-related matters if they are material to their financial position or performance (e.g. impact on cash flow and business model). Therefore, climate risk is not only an operational issue but also an issue of accounting measurement and the fairness of financial statement presentation (OECD, 2025).

Adaptation strategies such as investments in cold storage, supplier diversification, or increasing buffer stock change the short-term and long-term cost structure of SMEs. These adaptation expenditures can appear as operating expenses or fixed investments, affecting depreciation, amortisation, and the basis for tax deductions. Literature on sustainability accounting shows that the recognition and reporting of adaptation costs are crucial for performance transparency and decision-making. In other words, adaptation measures modify cost behaviour and accounting recognition, which in turn affect taxable profit and liquidity position. SME operations/resilience are growing, explicit integration between climate risk and accounting/taxation variables at the SME level remains weak (Inland Revenue, 2013). Policy sources (IFRS for SMEs guidance, OECD) require the recognition of climate impacts in financial statements, but empirical evidence testing how perceptions of climate risk and adaptation strategies affect cost recognition behaviour, inventory reserves, or tax compliance among SMEs (especially in the traditional culinary sector) is relatively scarce. Therefore, there is a clear research gap: connecting climate-informed entrepreneurial resilience with accounting outcomes (IFRS Accounting, 2023).

Climate Risk and Perceived Climate Risk

Climate change triggers various forms of risk that can affect business activities, ranging from extreme rainfall, heat waves, changes in seasonal patterns, to disruptions in the supply of raw materials. Perceived climate risk refers to the subjective understanding of actors (in this case, MSME actors) of the possibility and level of impact of climate phenomena on their business activities. This perception can be influenced by direct experience (e.g. floods, droughts), technical information, social networks, and economic indicators (prices, availability of raw materials). Empirical studies show that risk perception is an initial driver of adaptive behaviour: individuals/groups who are more aware of threats tend to adopt adaptive measures (Li et al., 2025). In the context of MSMEs, climate risks usually manifest in the form of supply chain disruptions, decreased demand, increased production costs, and product vulnerability to weather (Chen et al., 2025). The concept of perceived climate risk refers to business actors' subjective understanding of the level of climate threats to their businesses. This perception

influences adaptation readiness and strategic decision-making (Duanmu et al., 2025). Risk perception is particularly important because MSMEs often rely on intuition and experience in assessing environmental threats rather than technical data. For gudeg traders in DIY, climate risk perception is particularly related to the supply of young jackfruit (availability, quality, and price) and consumer behaviour during extreme weather. The higher the perception of climate uncertainty risk, the more likely businesses are to adopt more proactive adaptation strategies (Adamolekun et al., 2025).

Adaptation Strategies

Adaptation strategies for food MSMEs usually take the form of a combination of operational, technical, financial, and marketing measures. Examples include: buffer stock storage, supplier diversification, use of preservation technology (cold air/simple refrigeration), production scheduling, shifting sales to online channels during bad weather, or entering into long-term supply contracts. A recent literature review confirms that effective adaptation strategies are often pragmatic, gradual, and highly context-dependent (Backker et al., 2025). Recent studies show varying degrees of effectiveness: some strategies (e.g. supplier diversification, buffer stock) improve production continuity but require additional costs; digital marketing strategies can reduce the impact of decreased visits during bad weather but require digital literacy and customer access. Therefore, adaptation is not only a matter of technical measures, but also of resource capacity, access to information, and policy support (Hu et al., 2025). Supply chain adaptations such as supplier diversification, stock management, or the use of storage technology are important steps to maintain production continuity (Gao et al., 2025).

Climate-Adaptive Supply Chain Agility

The concept of supply-chain agility refers to the ability of a supply network to respond quickly and flexibly to changes in demand/supply, while supply-chain resilience emphasises the ability to recover from disruptions (Erdiaw-kwasie et al., 2023). Based on the above principles, I introduce the term Climate-Adaptive Supply Chain Agility (CASCA) as the ability of SME supply chain operations to proactively and reactively adjust sourcing and procurement mechanisms, processing/preservation, and distribution when affected by climate variability. CASCA includes actions such as: switching to local/regional suppliers, using adaptive buffer stocks, seasonal supply contracts, collaborating with farmers/processors, and simple information systems to monitor raw material availability. The theory of dynamic capabilities (sensing–seizing–transforming) provides the theoretical basis for why CASCA is an important mechanism for building operational resilience at the SME level.

Entrepreneurial Resilience

Entrepreneurial resilience refers to the ability of entrepreneurs to survive, adapt, and bounce back from shocks. Resilience has three main dimensions:

- Absorptive capacity (ability to absorb impact)
- Adaptive capacity (ability to adapt)
- Restorative capacity (ability to recover after a crisis)

The literature shows that resilience is influenced by internal factors (mindset, skills, capital, innovation) and external factors (social support, environmental context, market dynamics) (Fitriasari, 2020). Recent research also confirms that climate risk is an important trigger for resilience, especially for micro-enterprises that are highly dependent on environmental factors (Satpathy et al., 2025). In the context of gudeg vendors, resilience emerges when business actors are able to change production strategies, manage inventory, or

innovate in marketing when faced with extreme weather or raw material shortages (Salisu et al., 2020).

Research Hypotheses

H1: Perceived climate risk has a positive effect on entrepreneurial resilience. Climate risk encourages entrepreneurs to build resilience and adaptability.

H2: Adaptation strategies have a positive effect on entrepreneurial resilience. Good adaptation strategies will improve businesses' ability to recover and survive in difficult conditions.

H3: Climate-Adaptive Supply Chain Agility positively influences entrepreneurial resilience. This means that climate-adaptive supply chain agility will improve MSMEs' ability to survive, adapt, and recover from disruptions.

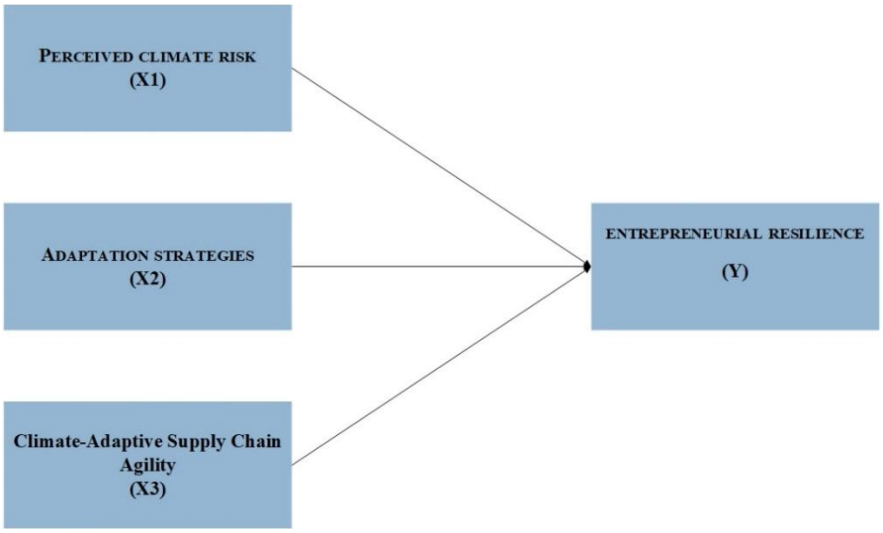

Figure 1 Research Concept

METHODOLOGY

Research Design

This study uses a quantitative approach with the aim of testing the causal relationship between three main variables that are assumed to influence entrepreneurial resilience in gudeg MSMEs in the Special Region of Yogyakarta (DIY). The quantitative approach was chosen because it allows researchers to systematically measure the perceptions of MSME actors, test hypotheses statistically, and provide empirical evidence on how climate risk, adaptation strategies, and adaptive supply chain agility can improve business resilience. The research design is explanatory because it focuses on explaining the cause-and-effect relationship between variables. The research respondents are gudeg SME actors in DIY who face weather challenges, particularly related to the supply of young jackfruit, operational stability, and sales fluctuations due to climate variability.

Population and Sample

Population: All gudeg MSMEs in DIY affected by climate change, particularly in relation to the instability of young jackfruit supply and sales fluctuations. Sample: Determined using purposive sampling, namely MSME actors who:

- process gudeg as their main product,
- experience weather impacts on production/sales, and
- have at least 1 year of operational data.

The minimum sample size will be adjusted to the SEM analysis (e.g. PLS-SEM) with a minimum recommendation of 10 times the most indicators, or around 120–150 respondents.

Data Analysis Techniques

The collected data will be analysed using Partial Least Squares Structural Equation Modelling (PLS-SEM) through SmartPLS software. This technique was chosen because it is capable of analysing complex causal relationships between latent variables, even though the data is not fully normally distributed. The analysis was conducted in two stages, namely evaluation of the measurement model (outer model) to test the validity and reliability of the instruments, and evaluation of the structural model (inner model) to test the research hypotheses (Hair et al., 2017).

RESULTS AND DISCUSSION

Result

Evaluation of Measurement Models (Outer Model)

An evaluation of the outer model was conducted to test the validity and reliability of the constructs, which consisted of:

1. Convergent validity
2. Discriminant validity (Fornell-Larcker and HTMT)
3. Composite reliability (Composite Reliability)

The three main constructs in this study are:

- Perceived Climate Risk (PCR)
- Adaptation Strategies (AS)
- Climate-Adaptive Supply Chain Agility (CASCA)
- Entrepreneurial Resilience (ER)

Evaluation of the measurement model allows for testing the validity and reliability of the instruments used in measuring latent constructs and related indicators (J.F. Hair et al., 2010). One criterion that can be applied is Cronbach's Alpha, which measures internal consistency based on the correlation between indicators. Excellent reliability is indicated by a Cronbach's Alpha value above 0.80, whereas an acceptable level of reliability is indicated by a value above 0.70. Other measurements include the Dijkstra-Henseler reliability coefficient (ρA) and composite reliability criteria. To guarantee that the measured construct satisfies sufficient reliability standards, a minimum value of 0.70 is advised (Hair JR et al., 2020). A thorough assessment of these three factors paints a complete picture of how well latent constructs are measured in a research model.

Convergent Validity

The correlation between item scores and latent variable scores is used to evaluate the convergent validity of the measurement model with reflective indicators. A value >0.5 is still acceptable as long as it is not less than the ideal factor loading of >0.7 (Hair et al., 2018). Good validity is indicated by the test results, which show that all factor loadings are >0.7 (Table 1). Furthermore, AVE (Average Variance Extracted) >0.5 signifies that the latent construct satisfies the requirements for convergent validity by explaining over 50% of the indicator variance.

Discriminant Validity

The Fornell-Larcker and HTMT criteria were used to assess discriminant validity. Each construct's square root of the AVE must be greater than the correlation between them, according to the Fornell-Larcker criteria (Table 2). In the meantime, to guarantee strong discrimination

between constructs, the HTMT value needs to be much lower than 0.85. According to Table 3's analysis results, all HTMT values are less than 1, indicating that each model construct is unique and has sufficient discriminant validity. This result supports the notion that the constructs measured in this study are distinct and empirically distinct.

Indicator Reliability

Outer loadings, which show the percentage of indicator variance accounted for by latent constructs, can be used to evaluate an indicator's reliability (Hair et al., 2018). The study's findings showed that every outer loading was greater than the 0.7 minimum, suggesting that every indicator was reliable and accurately reflected the associated latent constructs. These results demonstrate how well the indicators explain the variance of the construct being measured.

Table 1 Convergent Validity Outer Loading

Variable	Indicator	Loading	Description
PCR	PCR1	0.812	Valid
	PCR2	0.845	Valid
	PCR3	0.783	Valid
AS	AS1	0.874	Valid
	AS2	0.893	Valid
	AS3	0.861	Valid
CASCA	CASCA1	0.801	Valid
	CASCA2	0.829	Valid
	CASCA3	0.794	Valid
ER	ER1	0.871	Valid
	ER2	0.903	Valid
	ER3	0.889	Valid

Table 2 Convergent Validity Average Variance Extracted (AVE)

Variable	AVE	Description
PCR	0.671	Valid
AS	0.771	Valid
CASCA	0.652	Valid
ER	0.790	Valid

Table 3 Fornell-Larcker criteria

Variable	PCR	AS	CASCA	ER
PCR	**0.819**			
AS	0.512	**0.878**		
CASCA	0.468	0.556	**0.807**	
ER	0.594	0.663	0.615	**0.889**

Table 4 HTMT (Heterotrait–Monotrait Ratio)

Variable Relationships	HTMT	Kriteria	Conclusion
PCR–AS	0.593	< 0.90	Valid
PCR–CASCA	0.541	< 0.90	Valid

AS–CASCA	0.664	< 0.90	Valid
PCR–ER	0.674	< 0.90	Valid
AS–ER	0.742	< 0.90	Valid
CASCA–ER	0.693	< 0.90	Valid

Table 5 Multicollinearity (VIF)

Hubungan	VIF	Description
PCR → ER	1.882	No multicollinearity
AS → ER	2.104	No multicollinearity
CASCA → ER	1.963	No multicollinearity

Table 6 R^2 Value

Endogen Varable	R^2	Interpretation
Entrepreneurial Resilience	**0.622**	Strong

Table 7 Hypothesis Testing Results

Hypotheses	Path Coefficient (β)	t-value	p-value	Decision
H1: PCR → ER	**0.268**	3.921	0.000	Accepted
H2: AS → ER	**0.371**	5.482	0.000	Accepted
H3: CASCA → ER	**0.314**	4.628	0.000	Accepted

The Effect of Perceived Climate Risk on Entrepreneurial Resilience

The results show that Perceived Climate Risk has a significant effect on Entrepreneurial Resilience with a value of $\beta = 0.268$, $t = 3.921$, $p < 0.001$. This finding indicates that the higher the perception of MSME actors towards climate risks such as extreme weather, prolonged rain, excessive heat, disruption of young jackfruit supply, and decline in sales, the stronger the motivation of business actors to strengthen their resilience.

This finding is in line with Protection Motivation Theory, which states that the perception of threats can encourage individuals to increase their adaptive capacity to protect the continuity of their activities. In the context of Gudeg SMEs, the perception that bad weather can disrupt the supply of raw materials, accelerate product spoilage, or reduce buyer interest makes business actors more vigilant and proactive in building business protection mechanisms (Kuang et al., 2025).

This finding is also in line with research by Negev et al. (2022), which found that the perception of climate risk significantly increases the adoption of adaptation strategies among food sector business actors. For gudeg traders, the risk of delays in the supply of young jackfruit during the rainy season or a decline in buyers due to extreme weather encourages them to strengthen their resilience and ability to recover quickly. Thus, the perception of climate risk is not only a threat but also a trigger for vigilance and strengthening business resilience.

The Influence of Adaptation Strategies on Entrepreneurial Resilience

The Adaptation Strategies variable shows the strongest influence on Entrepreneurial Resilience ($\beta = 0.371$, $t = 5.482$, $p < 0.001$). This indicates that the better the adaptation strategies implemented by MSMEs, the greater their ability to survive, operate, and recover from weather disturbances. Adaptation strategies commonly implemented by Gudeg DIY MSMEs include:

1. Adjusting production volume based on weather conditions,
2. Using freezers to anticipate damage to raw materials,
3. Increasing the supply of young jackfruit during the harvest season,
4. Online sales during bad weather,
5. Diversifying suppliers from various regions in DIY.

These findings reinforce Sewando's (2025) climate adaptation theory, which states that adaptation is a series of actions that enable businesses to increase their resilience in the face of climate change. Empirically, this can be explained by the characteristics of Gudeg MSMEs, which are highly dependent on seasonal raw materials (young jackfruit) and often face fluctuations in demand during bad weather. Therefore, gudeg businesses that are more flexible in their adaptation will tend to be able to maintain business continuity and minimise losses.

The Influence of Climate-Adaptive Supply Chain Agility on Entrepreneurial Resilience

The Climate-Adaptive Supply Chain Agility variable also shows a positive and significant effect on Entrepreneurial Resilience ($\beta = 0.314$, $t = 4.628$, $p < 0.001$). This finding reinforces the concept of dynamic capabilities, which states that agility in sensing, seizing, and transforming resources is the foundation of organisational resilience (He & He, 2025). Climate-adaptive supply chain agility in Gudeg MSMEs is reflected in:

- The ability to quickly replace suppliers in the event of crop failure,
- Flexibility in purchase volume depending on the season,
- The ability to store reserve stocks when the weather is stable,
- Investment in simple storage technology,
- Collaboration with farmers to predict the jackfruit harvest season.

These findings are consistent with research by Uyanik & Koc (2025), which found that agile supply chains increase resilience, especially for food industries that are sensitive to the environment. In the context of Gudeg MSMEs, extreme weather disturbances often cause jackfruit quality to decline, prices to spike, and supply to be disrupted. MSMEs that have the ability to quickly switch suppliers or coordinate supplies will have higher resilience..

Based on the data processing results:

H1 accepted: Perceived Climate Risk has a significant positive effect on Entrepreneurial Resilience. This means that the higher the perception of climate risk, the higher the level of business resilience.

H2 accepted: Adaptation Strategies have a significant positive effect on Entrepreneurial Resilience. The better the adaptation strategies implemented by gudeg sellers, the stronger their resilience in facing weather and supply disruptions.

H3 accepted: Climate-Adaptive Supply Chain Agility has a significant positive effect on Entrepreneurial Resilience. The agility of climate-adaptive supply chains is an important factor in maintaining business continuity when jackfruit supplies are unstable.

Taxation and Accounting Implications

Based on the findings, several taxation-relevant implications emerge:

Table 8 Taxation and Accounting Implications

Climate Variable	Accounting Impact	Tax Implications
Perceived Climate Risk ↑	More conservative budgeting & risk hedging	Potential tax-adjustment behaviour to maintain liquidity

Climate Variable	Accounting Impact	Tax Implications
Adaptation Strategies ↑	Higher cost allocation → COGS rises	Cost can be recognised as deductible expenditure to reduce tax burden
Supply Chain Agility ↑	Stable revenue flow increases predictability	Improves tax compliance & lowers risk of late reporting

CONCLUSION AND SUGGESTION

This study aims to analyse how Perceived Climate Risk, Adaptation Strategies, and Climate-Adaptive Supply Chain Agility influence Entrepreneurial Resilience in Gudeg MSMEs in the Special Region of Yogyakarta (DIY), a traditional food sector that is highly dependent on the stability of raw material supplies (young jackfruit) and daily weather conditions. Based on the analysis using PLS-SEM, several key conclusions can be formulated as follows:

1. Perceived Climate Risk has a significant positive effect on Entrepreneurial Resilience. MSME actors' perceptions of climate change risks, including supply disruptions, extreme weather, and demand fluctuations, encourage them to increase their awareness and readiness to adapt. The higher the perception of risk, the stronger the tendency for business actors to develop resilience in the face of uncertainty.
2. Adaptation Strategies have the strongest influence on Entrepreneurial Resilience. Adaptation strategies related to production processes, stock management, supplier diversification, and sales pattern adjustments have been proven to increase the ability of MSMEs to survive and recover quickly from climate disturbances. This variable is the most dominant factor explaining business resilience.
3. Climate-Adaptive Supply Chain Agility has a significant positive effect on Entrepreneurial Resilience. The agility of an adaptive supply chain—the ability to switch suppliers, adjust purchase volumes, maintain reserve stocks, and respond quickly to climate disruptions—strengthens business continuity. Agility is a dynamic mechanism that helps traditional gudeg SMEs deal with the uncertainty of young jackfruit supply.

The findings of this study not only highlight how climate risk, adaptation strategies, and supply chain agility increase entrepreneurial resilience, but also show a strong link to accounting and taxation aspects. Business resilience has proven to play an important role in maintaining the financial stability of gudeg MSMEs, which ultimately has an impact on the regularity of financial recording, cost structure, and the ability to fulfil fiscal obligations. MSMEs that are more adaptive to climate change tend to be able to maintain positive cash flow, manage fluctuations in raw material costs, and maintain profit margins all of which contribute to a more accurate and consistent financial reporting process.

On the taxation side, higher operational resilience provides room for MSME players to fulfil their tax obligations more regularly. Smooth production and stable sales enable businesses to calculate taxable profits more accurately, minimise the risk of late payments, and reduce the possibility of unintentional non-compliance. Adaptation strategies also have the potential to generate deductible costs that can reduce the tax burden, particularly when MSMEs invest in cold storage, supply diversification, or risk reduction technologies. Thus, this study confirms that climate resilience is not only related to business continuity, but also affects fiscal sustainability as reflected in tax compliance and the quality of accounting information.

REFERENCES

Adamolekun, G., Li, H., & Xu, B. (2025). Carbon markets and firms ' perceived climate regulatory risk. Journal of Environmental Management, 393(August), 127050. https://doi.org/10.1016/j.jenvman.2025.127050

Backker, T. De, Vercammen, A., & Boute, R. (2025). International Journal of Production Economics A data-driven Component Risk Matrix to assess supply chain disruption risk. International Journal of Production Economics, August, 109810. https://doi.org/10.1016/j.ijpe.2025.109810

Chen, P., Zoynul, M., Zhao, X., & Peng, J. (2025). The impact of climate risk on local government financing costs : A mediation and threshold model analysis. Ecological Economics, 237(June), 108698. https://doi.org/10.1016/j.ecolecon.2025.108698

Duanmu, J., Li, Y., Tahsin, S., & Xu, J. (2025). International Review of Financial Analysis Crop damage , local climate risk perceptions , and small business access. International Review of Financial Analysis, 102(February), 104096. https://doi.org/10.1016/j.irfa.2025.104096

Erdiaw-kwasie, M. O., Abunyewah, M., Yusif, S., & Arhin, P. (2023). Heliyon Small and medium enterprises (SMEs) in a pandemic : A systematic review of pandemic risk impacts , coping strategies and resilience. Heliyon, 9(10), e20352. https://doi.org/10.1016/j.heliyon.2023.e20352

Fitriasari, F. (2020). How do Small and Medium Enterprise (SME) survive the COVID-19 outbreak? Jurnal Inovasi Ekonomi, 5(02), 53–62. https://doi.org/10.22219/jiko.v5i3.11838

Gao, Y., Liu, G., & Shum, S. (2025). Supply chain flexibility with link disruptions. Operations Research Letters, 64(March 2025), 107385. https://doi.org/10.1016/j.orl.2025.107385

Hair, J. F., Hult, G. T., Ringle, C., & Sarstedt, M. (2017). A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM) - Joseph F. Hair, Jr., G. Tomas M. Hult, Christian Ringle, Marko Sarstedt. In Sage.

He, J., & He, F. (2025). Acquisition of financial resources , dynamic capabilities , and embedding in corporate ecosystem platforms. Finance Research Letters, 86(PB), 108451. https://doi.org/10.1016/j.frl.2025.108451

Hu, Y., Xu, B., Feng, L., & Bai, G. (2025). An improved resilience evaluation method for supply chains with disruption tails. Reliability Engineering and System Safety, 267(PA), 111808. https://doi.org/10.1016/j.ress.2025.111808

Kim, D., & Tepe, E. (2025). Estimating the impacts of climate change risk perception on local housing market : A case study in Miami-Dade , Florida ☆. Cities, 169(June 2024), 106517. https://doi.org/10.1016/j.cities.2025.106517

Kuang, B., Hu, Y., & Chen, J. (2025). Developments in the Built Environment Unraveling household energy service relevant resilience behaviors for natural disasters : Perspective of extended protection motivation theory. Developments in the Built Environment, 24(July), 100763. https://doi.org/10.1016/j.dibe.2025.100763

Li, B., Wang, C., & Lv, W. (2025). Research in International Business and Finance Climate risk and local government debt decisions. Research in International Business and Finance, 78(June), 103010. https://doi.org/10.1016/j.ribaf.2025.103010

Mehmood, K., Kautish, P., Basahel, S., Fiano, F., & Papa, A. (2025). Technology in Society Unseen seeds , green minds in the digital era : How SMEs foster innovation through green intellectual capital , AI , and resource commitment. Contents Lists Available at ScienceDirect Technology, 84(October 2024).

Mondal, I., Das, A., Ariful, S. K., Jose, F., & Ahmed, H. (2025). Climate change-induced

vulnerability assessment for the Florida Coast using hybrid machine learning models. Ecological Indicators, 171(February), 113242. https://doi.org/10.1016/j.ecolind.2025.113242

Negev, M., Zohar, M., & Paz, S. (2022). Urban Climate Multidimensional hazards , vulnerabilities , and perceived risks regarding climate change and Covid-19 at the city level : An empirical study from Haifa , Israel. Urban Climate, 43(February), 101146. https://doi.org/10.1016/j.uclim.2022.101146

IFRS Accounting. (2023). Effects of climate-related matters on financial statements prepared in accordance with the IFRS for SMEs Accounting Standard (Issue May).

Inland Revenue. (2013). Exploring the impact of adverse events on SME tax compliance behaviour: A longitudinal study on Inland Revenue's response to, and learnings from, the Christchurch earthquakes (Issue July).

Adamolekun, G., Li, H., & Xu, B. (2025). Carbon markets and firms ' perceived climate regulatory risk. Journal of Environmental Management, 393(August), 127050. https://doi.org/10.1016/j.jenvman.2025.127050

Backker, T. De, Vercammen, A., & Boute, R. (2025). International Journal of Production Economics A data-driven Component Risk Matrix to assess supply chain disruption risk. International Journal of Production Economics, August, 109810. https://doi.org/10.1016/j.ijpe.2025.109810

Chen, P., Zoynul, M., Zhao, X., & Peng, J. (2025). The impact of climate risk on local government financing costs : A mediation and threshold model analysis. Ecological Economics, 237(June), 108698. https://doi.org/10.1016/j.ecolecon.2025.108698

Duanmu, J., Li, Y., Tahsin, S., & Xu, J. (2025). International Review of Financial Analysis Crop damage , local climate risk perceptions , and small business access. International Review of Financial Analysis, 102(February), 104096. https://doi.org/10.1016/j.irfa.2025.104096

Erdiaw-kwasie, M. O., Abunyewah, M., Yusif, S., & Arhin, P. (2023). Heliyon Small and medium enterprises (SMEs) in a pandemic : A systematic review of pandemic risk impacts , coping strategies and resilience. Heliyon, 9(10), e20352. https://doi.org/10.1016/j.heliyon.2023.e20352

Fitriasari, F. (2020). How do Small and Medium Enterprise (SME) survive the COVID-19 outbreak? Jurnal Inovasi Ekonomi, 5(02), 53–62. https://doi.org/10.22219/jiko.v5i3.11838

Gao, Y., Liu, G., & Shum, S. (2025). Supply chain flexibility with link disruptions. Operations Research Letters, 64(March 2025), 107385. https://doi.org/10.1016/j.orl.2025.107385

Hair, J. F., Hult, G. T., Ringle, C., & Sarstedt, M. (2017). A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM) - Joseph F. Hair, Jr., G. Tomas M. Hult, Christian Ringle, Marko Sarstedt. In Sage.

He, J., & He, F. (2025). Acquisition of financial resources , dynamic capabilities , and embedding in corporate ecosystem platforms. Finance Research Letters, 86(PB), 108451. https://doi.org/10.1016/j.frl.2025.108451

Hu, Y., Xu, B., Feng, L., & Bai, G. (2025). An improved resilience evaluation method for supply chains with disruption tails. Reliability Engineering and System Safety, 267(PA), 111808. https://doi.org/10.1016/j.ress.2025.111808

Kim, D., & Tepe, E. (2025). Estimating the impacts of climate change risk perception on local housing market : A case study in Miami-Dade , Florida ☆. Cities, 169(June 2024), 106517. https://doi.org/10.1016/j.cities.2025.106517

Kuang, B., Hu, Y., & Chen, J. (2025). Developments in the Built Environment Unraveling household energy service relevant resilience behaviors for natural disasters : Perspective

of extended protection motivation theory. Developments in the Built Environment, 24(July), 100763. https://doi.org/10.1016/j.dibe.2025.100763

Li, B., Wang, C., & Lv, W. (2025). Research in International Business and Finance Climate risk and local government debt decisions. Research in International Business and Finance, 78(June), 103010. https://doi.org/10.1016/j.ribaf.2025.103010

Mehmood, K., Kautish, P., Basahel, S., Fiano, F., & Papa, A. (2025). Technology in Society Unseen seeds , green minds in the digital era : How SMEs foster innovation through green intellectual capital , AI , and resource commitment. Contents Lists Available at ScienceDirect Technology, 84(October 2024).

Mondal, I., Das, A., Ariful, S. K., Jose, F., & Ahmed, H. (2025). Climate change-induced vulnerability assessment for the Florida Coast using hybrid machine learning models. Ecological Indicators, 171(February), 113242. https://doi.org/10.1016/j.ecolind.2025.113242

Negev, M., Zohar, M., & Paz, S. (2022). Urban Climate Multidimensional hazards , vulnerabilities , and perceived risks regarding climate change and Covid-19 at the city level : An empirical study from Haifa , Israel. Urban Climate, 43(February), 101146. https://doi.org/10.1016/j.uclim.2022.101146

Salisu, I., Hashim, N., Mashi, M. S., & Aliyu, H. G. (2020). Perseverance of effort and consistency of interest for entrepreneurial career success: Does resilience matter? Journal of Entrepreneurship in Emerging Economies, 12(2), 279–304. https://doi.org/10.1108/JEEE-02-2019-0025

Satpathy, A. sanatan, Sahoo, S. kumar, Mohanty, A., & Mohanty, P. P. (2025). Strategies for enhancements of MSME resilience and sustainability in the post-COVID-19 era. Social Sciences and Humanities Open, 11(October 2024), 101223. https://doi.org/10.1016/j.ssaho.2024.101223

Sewando, P. T. (2025). Climate-proofing agriculture : economic feasibility of adaptation strategies for agro-pastoral farmers in Tanzania. Climate Services, 39(July), 100600. https://doi.org/10.1016/j.cliser.2025.100600

UN Climate Change. (2021). Small and Medium-Sized Enterprises are Crucial for Climate Action in South-East Asia. UN Climate Change News. https://unfccc.int/news/small-and-medium-sized-enterprises-are-crucial-for-climate-action-in-south-east-asia?utm_source=chatgpt.com

Uyanik, C., & Koc, T. (2025). Journal of Open Innovation : Technology , Market , and Complexity Does adopting Industry 4 . 0 design principles lead to innovation performance ? Moderated mediation effects of dynamic capabilities and environmental dynamism. Journal of Open Innovation: Technology, Market, and Complexity, 11(4), 100660. https://doi.org/10.1016/j.joitmc.2025.100660

OECD. (2025). Scaling Finance And Investment For Climate Adaptation.