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FLEXIBILITY, LEARNING, AND BUSINESS CONTINUITY AS DETERMINANTS OF MICROENTERPRISE RESILIENCE IN POLAND

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Purpose: The article aims to establish which internal adaptive capabilities — diversification and proactive adaptation, business continuity planning (BCP), and flexibility and learning culture — are most strongly associated with the organizational resilience of micro and small solid-fuel distribution firms, and to estimate the incremental contribution of each.
Design/methodology/approach: The study draws on a nationwide survey of 175 firms. Resilience was measured with a thirteen-item composite index (B1–B13); second-order confirmatory factor analysis and reliability analysis were applied, together with hierarchical OLS regression using HC3 robust standard errors.
Findings: Flexibility and learning culture showed the strongest association with resilience ($b = 0.391$; $p < 0.001$). BCP is significant ($b = 0.549$; $p = 0.003$), with the effect driven by informal and planned arrangements (no formal-plan group was observed). Diversification is significant at the block level, but its standalone effect disappears in the final model. The final model explains 48.6% of the variance.
Research limitations/implications: The cross-sectional design and self-reported data limit causal inference and raise a common-method-variance risk. Resilience, moreover, rests on several co-occurring adaptive practices rather than on any single instrument.
Practical implications: Microfirms stand to gain more from investing in operational flexibility, post-crisis learning, and minimal continuity routines than in elaborate formal plans.
Originality/value: The study offers a rare account of the internal determinants of resilience among solid-fuel microdistributors in the context of the energy transition.
Keywords: organizational resilience; dynamic capabilities; operational flexibility; microenterprises; energy transition.
Category of the paper: research paper.

1. Introduction

The energy crisis of 2021-2022 and the long-run pressure of the energy transition constitute a double, partly overlapping shock for small solid-fuel distributors (Emiliozzi et al., 2025; Goldthau, Youngs, 2023; Sokołowski, Bouzarovski, 2022). Given their limited internal

resources, the survival of these firms depends largely on their adaptive capabilities (Duchek, 2020; Eggers, 2020). Even so, the internal determinants of resilience at the micro scale remain poorly understood empirically, which constitutes a substantial research gap.

A second gap concerns the size class of the entities themselves. Microenterprises account for more than 97% of firms in Poland and generate nearly 28% of GDP (PARP, 2025), yet they remain under-researched in many areas — excluded from empirical studies or aggregated into the broader SME category (Saarela, Simunaniemi, 2025).

The aim of this article is to establish which internal adaptive capabilities are most strongly associated with the organizational resilience of solid-fuel distribution microfirms in Poland, and to estimate the incremental contribution of each once control variables are taken into account. Three research questions were posed: (RQ1) to what extent diversification and proactive adaptation, BCP, and flexibility and learning are associated with resilience; (RQ2) what incremental contribution each block makes once controls and earlier predictors have been entered; (RQ3) which mechanism proves dominant once the others are accounted for, and how this should be interpreted theoretically.

2. Literature review

2.1. Organizational resilience as a capability construct

Organizational resilience is increasingly understood not as a fixed trait but as a developable capacity to anticipate, absorb, and adapt to adversity — and to learn from it (Lengnick-Hall et al., 2011; Williams et al., 2017; Duchek, 2020). Literature reviews consistently point to a multidimensional structure that combines elements of preparedness, adaptive capacity, and learning and leadership (Hillmann, Guenther, 2021; Linnenluecke, 2017). This three-part structure underpins the measurement model adopted here. Operationally, it draws on the validated Benchmark Resilience Tool (Lee, Vargo, Seville, 2013) and on capability-based conceptualizations of resilience (Kantur, İşeri-Say, 2012; Duchek, 2020), from which the three dimensions of the adopted scale derive.

In small firms the construct is particularly salient: a limited resource buffer makes them at once more vulnerable to shocks and more dependent on managerial agility (Sullivan-Taylor, Branicki, 2011; Herbane, 2019). Crisis research emphasizes that smaller organizations rely less on formalized systems and more on flexible, owner-led routines (Eggers, 2020; Branicki et al., 2018).

2.2. The dynamic capabilities perspective

The three mechanisms under study were framed as manifestations of dynamic capabilities, that is, the firm's capacity to sense, seize, and reconfigure resources under conditions of change (Teece et al., 1997; Teece, 2007; Eisenhardt, Martin, 2000). This perspective treats diversification, continuity planning, and flexibility and learning as elements of a single capability system. It also yields the expectation that the article puts to an empirical test: capabilities most closely tied to ongoing reconfiguration — flexibility and learning — should carry more explanatory weight than discrete, episodic actions.

2.3. Diversification and proactive adaptation

Strategic responses to hostile and shifting environments often emphasize diversification and proactiveness as routes to reducing dependence and improving adaptive fit (Miller, 1983; Covin, Slevin, 1989; Lengnick-Hall et al., 2011; Ortiz-de-Mandojana, Bansal, 2016). In small firms, proactive environmental scanning and offer renewal can buffer demand shocks and open up new customer segments. Research shows that small and medium-sized firms that broadened their offer during a crisis outperformed firms whose profile remained unchanged (Clauss et al., 2022; Puumalainen et al., 2023). Hypothesis H1 therefore posits that firms that responded concretely to the post-2021 energy crisis — by introducing new fuels, online sales, or advisory services — display measurably higher resilience than those that made no changes to their offer. Diversification, however, tends to be a component of a broader proactive posture rather than a standalone action, which the article treats as part of the interpretive context for the results.

H1. Microenterprises that diversified their offer (e.g., by introducing alternative fuels, e-commerce, or advisory services) after 2021 display significantly higher organizational resilience than firms without diversification.

2.4. Business continuity planning

What can help a firm maintain continuity of operations during a crisis is a plan that anticipates a range of event scenarios. This role is played by the business continuity plan (BCP), defined as documented procedures that guide an organization in responding to disruption and in recovering, resuming, and restoring operations to a predefined level (ISO 22301:2019). More broadly, business continuity management is conceived as a holistic process of identifying threats and building a response capacity that protects an organization's key operations and stakeholders (Herbane, Elliott, Swartz, 2004). Business continuity management is traditionally framed as a formalized practice, yet small-firm research indicates that microfirms rarely adopt formal written plans, relying instead on informal arrangements (Herbane, 2010). Decisions are taken as events unfold and demand a response, and that response is often largely intuitive (Fasth et al., 2022). Formal written plans were therefore to be expected only rarely in the studied population, which is why the hypothesis was framed broadly to include informal arrangements.

The question that matters for this sector is thus whether any continuity routine — formal, intended, or informal — is associated with higher resilience.

H2. Microenterprises with a business continuity plan (BCP — formal or informal) display significantly higher organizational resilience, and the effect is stronger when the plan is complete and tested.

2.5. Flexibility and learning culture

What The third mechanism under study is flexibility and learning culture. Operational flexibility — the capacity to reconfigure resources quickly, switch suppliers and channels, and adjust prices — together with a learning orientation that treats shocks as opportunities for improvement, is central to adaptive capacity (Volberda, 1996; March, 1991; Sutcliffe, Vogus, 2003). Duchek (2020), in turn, conceives of resilience as a three-stage process (anticipation, coping, adaptation) in which learning from crises underpins the adaptation stage.

Empirical research on small firms is consistent with a mechanism in which flexibility and learning enable adaptation, which in turn raises firm resilience. For instance, the capacity to reconfigure resources and a proactive posture supported firm performance after a natural disaster (Battisti, Deakins, 2017); organizational ambidexterity — combining exploitation of the current model with exploration of new solutions — explained SME resilience during the financial crisis (Iborra et al., 2020); and small firms in recession proved adaptable despite lacking formal crisis-management structures (Smallbone et al., 2012). Resilience capability is, moreover, built through everyday cognitive and behavioural practices, not solely through formalized procedures (Lengnick-Hall et al., 2011; Duchek, 2020). It can therefore be expected that flexibility and learning are associated with resilience regardless of whether a firm holds a formal BCP or how far it has diversified its offer — that they constitute an independent predictor rather than a derivative of the other mechanisms.

H3. Higher operational flexibility and a stronger learning culture are associated with significantly higher organizational resilience in microenterprises, regardless of formal BCP adoption and the scale of diversification.

3. Data and methods

3.1. Sample and selection

The target population comprised active solid-fuel distributors (fuel depots) operating in Poland. Purposive sampling was applied; 175 complete questionnaires from firm representatives across all Polish macroregions ultimately qualified for analysis. The sampling frame was drawn from the ciepło.gov.pl database and from registers of firms distributing solid

fuels from Polish hard-coal mines. Invitations to an online survey (Google Forms) were sent to the 3022 enterprises identified in this way. The study was conducted in April and May 2026. This corresponds to a response rate of 5.8% (175 of 3022), a level consistent with the low response rates repeatedly documented for unsolicited online surveys of small-firm owner-managers, who are a notoriously hard-to-reach group (Newby, Watson, Woodliff, 2003). Because participation was voluntary, a degree of self-selection cannot be excluded: firms that were more actively managed or more strongly affected by the energy crisis may have been more inclined to respond, which would tend to bias the resilience estimates upward rather than downward. The estimates should therefore be read as conditional on participation.

The sample structure was dominated by microenterprises — 74.9% of firms employ fewer than ten people (15.4% are sole proprietorships and 48.0% employ two to five workers) — which mirrors the structure of the sector (UOKiK, 2022). The predominance of the smallest entities is thus a feature of the studied population, not a sampling flaw. In the UOKiK (2022) market study, firms employing up to nine people likewise dominated the sector (2072 of the entities examined, of which 1408 employed no more than three), and more than 97% of sellers operated no more than three depots, so the size profile of the present sample closely tracks that of the population. The sample was nonetheless assembled through purposive, voluntary sampling rather than random selection; its findings therefore support analytical generalization to firms of similar size and market position rather than statistical generalization to the entire population of Polish solid-fuel distributors. The ten-employee threshold corresponds to the definition of a microenterprise adopted in EU law (Commission Recommendation 2003/361/EC). Respondents were primarily owners and co-owners (74.3%), that is, people with direct knowledge of the firm's situation, which strengthens informant validity (Kumar et al., 1993). The studied population is therefore overwhelmingly small-scale and personally run by its owners.

Coal remains the core product (offered by 90.9% of firms), although 60.6% already sell wood pellets or briquettes, lower-emission fuels. The scale of the demand decline over the studied period is illustrated by revenue change: comparing 2023 with 2021, 47.4% of firms reported a decline, including 27.4% reporting a drop of more than 30%.

3.2. Variable measurement

The dependent variable is organizational resilience, operationalized as the mean of thirteen items rated on a five-point Likert scale (B1-B13). The items were adapted from the validated Benchmark Resilience Tool (Lee, Vargo, Seville, 2013) and from capability-based models of resilience (Kantur, İşeri-Say, 2012; Duchek, 2020), from which the three-dimensional structure adopted here derives. The items span three related dimensions of resilience — preparedness for disruption, adaptive capacity, and learning and leadership — ranging from holding reserves sufficient to weather a period of disturbance, through the speed of response to changing conditions, to drawing lessons from past crises.

Three predictors correspond to the three mechanisms under test. Diversification and proactive adaptation were captured as a composite index (hereafter DIV_composite) combining the introduction of a new offer, the count of changes actually implemented, the revenue share from new products or services, and a four-item proactivity scale. Business continuity planning was in turn captured as an index (BCP_composite) combining plan status (none, planned, or informal), the number of plan elements, and the perceived value of continuity planning. Plan-quality items were assessed only in firms that hold a plan; zeros produced by this filtering were treated as the absence of a plan and not interpreted as genuine Likert disagreement. Flexibility and learning culture were measured with a six-item scale (FLEX_index) covering, among other things, learning from difficulties, market monitoring, knowledge sharing, and fast operational reconfiguration. Its items correspond to the three stages of resilience capability — anticipation, coping, and adaptation — distinguished by Duchek (2020). All three labels (DIV_composite, BCP_composite, FLEX_index) are used throughout the remainder of the text, in the tables, and in the discussion of results.

All models include control variables reflecting firm characteristics: age, employment, breadth of offer, current financial standing, the revenue trajectory in 2023 and 2025 (with separate indicators for "don't know" responses), and macroregion.

3.3. Analytical strategy

The analysis proceeded in three steps. First, descriptive statistics were computed and the reliability and structure of the resilience index were evaluated — using Cronbach's alpha and second-order confirmatory factor analysis (with the WLSMV estimator, appropriate for ordinal Likert indicators; Li, 2016; Rosseel, 2012) — to ensure that the thirteen items can defensibly be combined into a single index. Second, bivariate relationships between each mechanism and resilience were examined, with tests selected after their assumptions had been checked and a robust variant applied where variances proved unequal. Third, a hierarchical regression model was estimated in which predictors entered in successive blocks — controls, diversification (DIV_composite), continuity planning (BCP_composite), and flexibility (FLEX_index) — making it possible to assess the incremental contribution of each mechanism over and above the variables entered earlier and thereby to settle their relative importance. Inference was based on HC3 robust standard errors, a conservative heteroskedasticity-consistent estimator; all computations were performed in R (R Core Team, 2025).

4. Results

4.1. Descriptive statistics and measurement credibility

Mean resilience in the studied population is 3.49 on the five-point scale (SD = 0.68), with marked variation across firms (from 1.69 to 4.85). This variation is sufficient to support an analysis of its determinants. Descriptive statistics for the dependent variable and the three predictors are reported in Table 1. The distribution of continuity planning matters for the analyses that follow: no firm holds a formal written plan, so the empirical contrast runs between no plan (62.9%), a planned BCP (23.4%), and an informal BCP (13.7%).

Table 1.
Descriptive statistics for the dependent variable and predictors

Variable	Mean	SD	Min	Max
Organizational resilience	3.49	0.68	1.69	4.85
Diversification and proactivity (DIV_composite)	0.34	0.27	0.00	0.87
Business continuity planning (BCP_composite)	0.19	0.21	0.00	0.89
Flexibility and learning (FLEX_index)	3.57	0.71	1.00	5.00

The resilience index proved reliable, and the second-order confirmatory factor analysis supported its three-dimensional structure (CFI = 0.94; TLI = 0.92; SRMR = 0.08; RMSEA = 0.10, 90% CI [0.085; 0.120]). Fit is not uniform: the incremental indices favour the three-block structure and SRMR sits close to conventional thresholds, whereas RMSEA exceeds them — a pattern common in compact ordinal survey scales with moderate sample sizes. The CFA result was therefore treated as supportive rather than definitive evidence; together with the high reliability, however, it justifies combining the thirteen items into the single index used as the dependent variable. The reliability of the three key scales — the dependent variable and the two predictor scales relevant to hypotheses H1 and H3 — is summarized in Table 2.

Table 2.
Reliability of the key scales

Scale	Number of items	Cronbach's α
Organizational resilience (dependent variable)	13	0.86
Proactive adaptation (part of H1)	4	0.85
Flexibility and learning (H3)	6	0.76

4.2. Internal determinants of resilience

The hierarchical regression, with predictors entered in successive blocks, revealed a clear hierarchy of importance. Controls alone explained 28% of the variance in resilience; adding diversification raised this share only marginally, continuity planning moderately, and the largest incremental gain — thirteen percentage points — came with the addition of flexibility and

learning. The final model explains nearly half of the variance in resilience ($R^2 = 0.49$). Final-model coefficients are presented in Table 3.

Table 3.
Hierarchical resilience model — final-model coefficients (HC3 robust standard errors)

Predictor	b	SE	p
Flexibility and learning (FLEX_index)	0.39	0.07	< 0.001
Business continuity planning (BCP_composite)	0.55	0.18	0.003
Diversification and proactivity (DIV_composite)	0.23	0.15	0.118

In the final model, flexibility and learning remain the strongest and a highly significant predictor, continuity planning retains its significance, and the standalone contribution of diversification disappears once the other mechanisms are included. The model satisfies its assumptions: the Breusch–Pagan test sits at the edge of conventional significance ($p = 0.057$), which further justifies the use of robust standard errors, and multicollinearity does not distort the estimates (maximum adjusted GVIF = 1.35).

4.3. Hypothesis testing

Hypothesis H1 posited that firms that made concrete changes to their offer after 2021 — introducing alternative fuels, online sales, or advisory services — display significantly higher resilience than firms without such changes. The test did not yield unambiguous confirmation. A one-way ANOVA across the three diversification-status groups (no change, planning, implemented) showed no significant difference between them ($F(2, 172) = 0.90$; $p = 0.41$), meaning that the mere fact of having or not having introduced new products and services does not separate firms by resilience level. At the level of the continuous measure, the Spearman correlation between the composite diversification index and resilience is admittedly significant ($\rho = 0.35$; $p < 0.001$), yet in the final model — once BCP and flexibility are accounted for — the diversification coefficient loses statistical significance ($b = 0.23$; $p = 0.118$). Hypothesis H1 was therefore not confirmed in its assumed form: diversification as a discrete, standalone action does not differentiate resilience levels. The association visible at the bivariate level appears to reflect an adaptive orientation shared with flexibility and proactivity rather than an effect of the change in offer itself.

Hypothesis H2 entailed two conditions: first, that firms with any business continuity plan (formal or informal) display higher resilience; second, that the effect is stronger when the plan is complete and tested. The first part was confirmed. Resilience rises monotonically from firms with no plan at all (mean 3.33), through firms with a planned BCP (3.62), to those with informal arrangements (3.95), and the differences are statistically significant (Welch's $F(2, 75.91) = 20.02$; $p < 0.001$); BCP_composite also remains a significant predictor in the final model ($b = 0.55$; $p = 0.003$). The second part — the stronger effect of a complete, tested plan — could not be tested because of the structure of the data: no firm in the sample holds a formal written

BCP, and the concept itself was new to 76.6% of respondents. The variation in plan quality and testing assumed by the hypothesis thus had no basis in the data for estimation. This is not, however, a negative result. The absence of formal plans is itself informative about the sector: business continuity here is built bottom-up, through informal managerial routines rather than formalized procedures. Testing the second part of H2 remains an open research question that requires a differently structured sample.

Hypothesis H3 posited that flexibility and learning are associated with resilience independently of BCP adoption and the scale of diversification — that is, that they constitute a freestanding predictor once the other mechanisms are controlled for. This hypothesis received full confirmation. FLEX_index shows the strongest bivariate association of all the predictors ($r = 0.57$; $p < 0.001$) and — crucially for the test — remains a highly significant predictor in the final model containing both BCP_composite and DIV_composite ($b = 0.39$; $p < 0.001$). The hierarchical regression shows that flexibility delivers the largest incremental gain in explained variance ($\Delta R^2 = 0.13$) of all three predictor blocks, even after controls, diversification, and BCP have been entered. The independence condition written into the hypothesis is therefore met: the effect of flexibility and learning culture neither disappears nor loses significance once the other mechanisms are taken into account.

The outcomes for all three hypotheses are gathered in Table 4.

Table 4.
Hypothesis testing

Hypothesis	Outcome
H1 — diversification and proactive adaptation	Not supported (group difference non-significant; the bivariate effect disappears in the final model)
H2 — business continuity planning	Partially supported: the effect of holding a BCP is confirmed; the completeness-and-testing condition is untestable (no formal-plan group in the sample)
H3 — flexibility and learning culture	Supported (effect significant after controlling for BCP and diversification)

5. Discussion

The resilience of the studied microenterprises rests on a handful of everyday adaptive practices rather than on a single formalized instrument. Flexibility and learning culture show the strongest association with it. In the realities of a small fuel depot run personally by its owner this makes sense — decisions are made quickly and close to the market, not within a formalized procedure. The result is consistent with the dynamic capabilities perspective: firms that learn from difficulties, monitor the market, reconfigure operations quickly, and retain their customers report higher resilience.

The BCP effect, though significant, is driven by informal and planned arrangements rather than formal plans — none were recorded in the sample. This also means that the second part of H2, positing a stronger effect for a complete and tested plan, remained empirically untestable. The questionnaire did include items on plan completeness and testing; the answers were simply absent, because in the studied firms continuity management runs through the owner's informal habits rather than written procedures. Variation in plan completeness and testing will only become assessable in a differently structured sample that includes firms with more formalized management. Diversification, in turn, did not confirm H1 in its assumed form: firms that broadened their offer after 2021 do not differ significantly in resilience from those that did not. The bivariate effect is real, but it disappears once flexibility and BCP are accounted for, suggesting that diversification is a manifestation of a broader proactive adaptive orientation rather than a mechanism independently linked to resilience.

The strength of the association between flexibility and resilience sits well with earlier research on small firms under shock conditions. Battisti and Deakins (2017), studying firms after earthquakes, identified a proactive posture and the capacity to integrate resources as factors supporting performance in highly uncertain environments; in the present study these correspond to the FLEX_index items on fast operational reconfiguration and market monitoring. A similar picture emerged from Iborra et al. (2020), where organizational ambidexterity explained the resilience of Spanish SMEs during the financial crisis. The present study shows that the same pattern also holds in far smaller entities that lack the organizational back-up typical of medium-sized enterprises. The picture likewise matches Duchek's (2020) process view: if learning from crises forms the core of the adaptation stage, the scale measuring this capacity should show the strongest association with resilience — and that is precisely the configuration visible in the data.

The continuity-planning pattern both confirms and extends prior findings. The complete absence of formal written plans is more extreme than in studies of British SMEs, where formal crisis planning was practised by a minority of firms (Herbane, 2010), and close to the picture from Sweden, where most SMEs maintained no crisis structure at all and decisions were taken intuitively, in the rhythm of events (Fasth et al., 2022). What that literature did not show, however, is the association between informal continuity routines and resilience: captured in BCP_composite, they remain a significant correlate of resilience even after controlling for flexibility. The value of continuity management thus lies not in the document itself but in the thinking-through of scenarios and safeguards that the owner carries "in their head". This conclusion resonates with Sullivan-Taylor and Branicki's (2011) argument that resilience frameworks designed for large organizations fit poorly with the realities of small firms, and with Herbane's (2019) proposal to view small-firm resilience through the lens of strategic renewal rather than procedures.

The diversification result calls for separate comment, since at first glance it contradicts pandemic-era studies in which a change of business model went hand in hand with better performance (Clauss et al., 2022; Puumalainen et al., 2023). At least three sources of this divergence are visible. Those studies measured financial performance or growth, whereas the dependent variable here is resilience understood as a capability, and a change of offer may improve revenues well before it translates into deeper organizational capabilities. Puumalainen et al. (2023) further noted that the pivot in operating model was strongly tied to entrepreneurial orientation — a broader posture whose counterpart in this study is flexibility and proactivity. The correlation structure in the present data supports this interpretation: proactivity correlates with resilience ($r = 0.62$) more strongly than the composite diversification index does ($\rho = 0.35$) and is clearly related to flexibility ($r = 0.49$), so part of the variance that diversification shares with resilience overlaps with flexibility and learning culture. The third reason is sector-specific: 60.6% of the studied firms already sell pellets or briquettes, so broadening the offer by itself differentiates firms only weakly, and a few years on from the 2021–2022 crisis may simply be too short for new revenue lines to have taken hold.

Against this literature, the contribution of the study is twofold. First, it adds to the modest stock of empirical knowledge on microenterprises, whose under-representation in management research is well documented (Saarela, Simunaniemi, 2025), and it does so in a sector under a double burden — the energy crisis and the transition. Second, it furnishes an argument for the thesis advanced in Section 2.2: under continuous change, capabilities of ongoing reconfiguration carry more explanatory weight than episodic actions, which corresponds to the distinction between dynamic capabilities and discrete strategic decisions (Teece, 2007; Eisenhardt and Martin, 2000). The results also sharpen the boundary conditions of this theory at the micro scale: the sensing, seizing, and reconfiguring functions are not distributed across procedures and specialized roles but concentrated in the person of the owner, so resilience depends more strongly on the owner's learning habits and flexibility than on the degree of managerial formalization. This suggests that formalization is not a necessary condition for building resilience capabilities in microfirms, and that the value of continuity practices may also be realized in informal form.

6. Conclusions, limitations, and implications

The study shows that flexibility and learning matter most for the resilience of the firms examined — independently of BCP and diversification, which was the key condition of hypothesis H3. Informal business continuity planning also proved a significant predictor, confirming the first part of H2. Diversification of the offer, by contrast and against H1, does not differentiate firms by resilience in its own right — its effect is visible only indirectly, through its link with the broader proactive posture.

The author is aware of the study's limitations. The findings should be read as associations rather than causal relationships: the data are cross-sectional and self-reported, and because the predictors and the dependent variable come from the same questionnaire, the estimates cannot be regarded as free of common-method-variance risk (Podsakoff et al., 2003). This risk is partly mitigated by the construction of the predictors themselves: the diversification and continuity indices combine items of different formats (status declarations, counts of implemented changes, revenue shares), not Likert ratings alone. Because the flexibility scale shares its response format with the dependent variable, common-method variance was assessed directly with Harman's single-factor test: the first unrotated factor accounted for 33.9% of the variance — well below the 50% threshold — and five factors had eigenvalues above one, indicating that no single factor dominates the covariance among items. This reduces, though does not eliminate, the common-method-variance concern. A particular limitation is the absence in the sample of firms with a formal written BCP, which precludes testing the second part of H2 on the stronger effect of a complete and tested plan. Hypothesis H1, in turn, was not confirmed in its assumed form — which need not mean that diversification is irrelevant; it may instead indicate that its effect operates through indirect channels that call for a different analytical model or longitudinal data. In practical terms — and bearing in mind that these conclusions apply most directly to small, owner-run solid-fuel distributors of the kind sampled here — the results indicate that such a microfirm gains most by developing operational flexibility, post-shock learning, and minimal business continuity routines; extending them to larger or more formalized firms, or to other branches of the energy sector, would require confirmation on a differently structured sample. In the author's view, future research should draw on longitudinal data and objective measures, extend to other sectors affected by the energy transition, and sample firms with a higher degree of managerial formalization.

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