

The Cost of Distance: Perceived Difficulty as a Pathway Linking Peripheral Location to SME Workforce Reduction in Crisis

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1. Objective and Contribution

Small and medium-sized enterprises (SMEs) form the backbone of traditional regional economies, particularly in peripheral areas where they represent the primary source of local employment and economic activity. Yet precisely because of their embeddedness in local markets and their limited financial buffers, peripheral SMEs are disproportionately vulnerable when systemic shocks occur. Understanding the mechanisms through which spatial disadvantage translates into firm-level crisis responses is therefore a central challenge for regional science and for the design of effective place-based policy.

This study contributes to regional science and New Economic Geography (NEG) by providing firm-level evidence that the "cost of distance" during crises operates not only through the objective financial channels emphasised in the NEG literature such as market access and trade-cost frictions (Krugman & Venables, 1990) but also through a perceptual and managerial burden that has received limited attention in regional resilience research (Sutton et al., 2023; Filip & Setzer, 2025). Specifically, we examine whether the association between peripheral location and workforce reduction among Israeli SMEs during the COVID-19 crisis operates through turnover losses, perceived entrepreneurial difficulty, or both.

Importantly, the perceptual burden we identify should not be understood as purely psychological in nature. Peripheral entrepreneurs face concrete structural constraints including geographic isolation, limited market access, weaker local ecosystems, and reduced access to skilled labour that may generate genuine operational difficulties and translate directly into heightened perceived difficulty. Our findings are therefore consistent with the view that spatial disadvantage shapes entrepreneurial responses through a combination of structural conditions and cognitive appraisal mechanisms, rather than financial exposure alone (Lazarus & Folkman, 1984; Staw et al., 1981).

The study advances regional resilience theory by identifying perceived difficulty as a micro-level pathway through which spatial disadvantage shapes firms' employment responses during systemic shocks, with direct implications for the design of crisis support policy targeting traditional economies in peripheral regions.

2. Theoretical Background

Regional science has long documented the structural disadvantages facing peripheral economies, including weaker infrastructure, smaller labour markets, and restricted access to finance, all of which place peripheral firms at a persistent competitive disadvantage relative to their central counterparts (North & Smallbone, 2000; Hansmeier et al., 2025). SMEs in peripheral regions rely heavily on local demand and community networks for resilience, yet these same ties may restrict strategic flexibility during external shocks (Korsgaard et al., 2015). The literature consistently shows that recovery in peripheral areas tends to be slower and more fragile than in core regions, reinforcing the centre–periphery gap (Sutton et al., 2023).

Drawing on Cognitive Appraisal Theory (Lazarus & Folkman, 1984), crisis responses are shaped not only by objective conditions but by entrepreneurs' subjective evaluation of threat severity. The same event may be perceived as a manageable challenge by one entrepreneur and an existential threat by another. Similarly, Threat-Rigidity Theory (Staw et al., 1981) suggests that perceived threat leads to defensive, rigid responses such as workforce reduction rather than adaptive strategies. Evidence suggests that entrepreneurs in peripheral locations systematically perceive their operating conditions as more constrained than their central counterparts, even under normal conditions (Felzensztein et al., 2013). During crises, this perceptual gap is likely to widen.

The COVID-19 pandemic provides a unique setting in which to examine these dynamics. As an exogenous shock that simultaneously affected businesses across regions, it serves as a real-world test case for understanding spatial disparities in resilience. In Israel, pre-existing structural disparities were more acute in peripheral regions, reflecting persistent centre–periphery gaps in socioeconomic conditions and public capacity (Machlica, 2020). Peripheral SMEs were likely more exposed to disruption because their adjustment options are shaped by local market conditions and weaker connectivity to major employment and service centres.

3. Data and Methods

The study draws on survey data from 492 small business owners in Israel, collected via the I-Panel online survey platform between October 2020 and August 2021 as part of a national monitoring effort led by the Ministry of Science. This period captured multiple lockdown cycles, enabling observation of sustained crisis responses rather than immediate reactions.

The division between centre and periphery followed the Central Bureau of Statistics Peripherality Index, which classifies localities into clusters from 1

(most peripheral) to 10 (most central). Clusters 1–4 were defined as the periphery and clusters 6–10 as the centre. Based on this classification, 184 respondents (37.5%) were classified as peripheral and 299 (60.7%) as central.

The Perceived Difficulty Index (PDI) was developed from a qualitative analysis of 87 interviews with SME owners, capturing three dimensions: managerial complexity, financial constraints, and existential risk, measured on a 5-point Likert scale ($\alpha > 0.75$). The Financial Loss Index (FLI) captured the degree of turnover decline during the crisis. Workforce reduction was measured with two items covering layoffs and furloughs ($\alpha > 0.73$). Critically, both PDI and business turnover were measured before and during the crisis, enabling baseline equivalence checks.

Data analysis proceeded in three stages. First, independent samples t-tests examined centre–periphery differences in PDI and FLI across the full sample ($n = 492$). Second, ordinary least squares regression examined predictors of workforce reduction among employer firms ($n = 205$). Third, we estimated two parallel indirect effect models using Hayes' PROCESS macro (Model 4) to examine whether the association between peripheral location and workforce reduction operated through FLI, PDI, or both. Rather than claiming causal mediation, we treat these as tests of indirect association examining whether the inclusion of each intervening variable attenuates the location–workforce reduction association and whether the indirect effect is statistically distinguishable from zero using bias-corrected bootstrapped confidence intervals based on 5,000 resamples.

4. Results

Prior to the crisis, no significant differences were detected between central and peripheral businesses in business turnover or perceived difficulty ($p > .05$), supporting baseline equivalence and suggesting that observed disparities reflect crisis-induced changes rather than pre-existing gaps.

During the crisis, peripheral businesses reported significantly greater perceived difficulty ($M = 3.04$, $SD = 1.10$) than central businesses ($M = 2.58$, $SD = 1.00$), $t(460) = 4.58$, $p < .001$, and greater financial loss ($M = 4.12$ vs. $M = 3.85$), $t(481) = 2.12$, $p = .034$. Among employer firms ($n = 205$), peripheral businesses reported significantly higher workforce reduction ($M = 3.21$ vs. $M = 2.43$), $t(203) = 3.82$, $p < .001$. Peripheral businesses were also more likely to have implemented layoffs (40.4% vs. 23.9%) and furloughs (64.9% vs. 37.9%), $\chi^2(1, N = 205) = 8.08$, $p < .01$.

Regression analysis showed that PDI emerged as the strongest predictor of workforce reduction ($\beta = .316$, $p < .001$), followed by FLI ($\beta = .200$, $p = .007$). Business location remained a significant predictor after controlling for both ($\beta = -$

.146, $p = .021$), suggesting a residual location effect beyond measured financial and perceptual strain.

The indirect effect models yielded contrasting results. The indirect pathway through financial loss was not statistically distinguishable from zero ($\beta = -0.188$, 95% CI [-0.42, 0.01]), as the association between peripheral location and turnover loss reached only marginal significance ($p = .055$). In contrast, the indirect pathway through perceived difficulty was statistically significant ($\beta = -0.32$, 95% CI [-0.59, -0.09]), and the direct association between location and workforce reduction became nonsignificant once PDI was included ($p = .63$), consistent with an indirect-only pattern.

5. Discussion and Policy Implications

These findings suggest that the "cost of distance" for SMEs in traditional peripheral economies operates not only through financial deterioration but also through a perceptual and managerial burden that may constitute a more proximal pathway linking spatial location to employment outcomes. This challenges conventional crisis interventions centred solely on financial relief, suggesting that addressing the managerial and perceptual dimensions of spatial disadvantage may be equally important for safeguarding employment in peripheral regions.

The policy challenge operates on two levels. First, standard economic indicators such as revenue decline may fail to identify peripheral businesses at greatest risk of workforce reduction, as perceptual strain may precede observable financial deterioration. Complementing existing financial screening with measures of entrepreneurial strain in peripheral regions may therefore be warranted. Second, place-based interventions such as locally embedded advisory services, peer support networks, and proactive outreach may complement financial instruments in safeguarding employment outcomes, consistent with broader arguments in the regional policy literature (Brenner & Niebuhr, 2021; Hansmeier et al., 2025).

These recommendations should be treated as exploratory directions warranting further empirical investigation rather than definitive prescriptions. Future research should employ longitudinal designs to establish temporal ordering, larger samples of employer firms, and comparative cross-national data to assess generalisability.

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