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Does Supply Chain Participation Influence SME Demand Expectations During Market Turbulence? An Exploratory Study

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Abstract

Small and medium-sized enterprises (SMEs) represent a cornerstone of the Italian industrial system, particularly within strategic supply chains (SSC) that are increasingly regarded as critical to resilience and competitiveness. However, existing literature suggests that the benefits of supply chain integration may not be unequivocal, especially under conditions of heightened market turbulence. This paper investigates whether participation in a strategic supply chain enhances or constrains SME performance and short-term expectations in uncertain economic environments. The analysis is based on qualitative survey data collected from SMEs in Lombardy, Italy's most industrialized region. The study compares two groups: firms affiliated with at least one strategic supply chain and firms operating independently. The empirical assessment focuses on structural characteristics, strategic positioning, and short-term demand expectations, highlighting differences in perceived adaptability and outlook between the two groups. The findings contribute to the debate on inter-firm cooperation by identifying both the advantages and potential trade-offs associated with structured supply chain participation, particularly in contexts characterized by economic instability and environmental turbulence.

Keywords: Instability, strategic supply chain, manufactury, Lombardy, SME

Introduction

Over the past decade, firms have operated within an increasingly unstable economic environment characterised by recurrent disruptions and systemic uncertainty. The COVID-19 pandemic, global supply chain bottlenecks, geopolitical tensions, energy price volatility, and accelerated technological transformation have collectively intensified what organisational scholars define as environmental turbulence, an external context marked by rapid, unpredictable, and interdependent change (Emery & Trist, 1965; Lengnick-Hall & Beck, 2003). This condition poses particular challenges in Europe, where structural growth constraints, uneven competitiveness, and rising production costs have exposed the fragility of an economic system largely composed of small and medium-sized enterprises (SMEs), which represent approximately 99% of all firms (European Commission, 2023).

In relatively stable contexts, integration into structured or strategic supply chains (SSCs) has traditionally been associated with performance gains for SMEs. Prior research highlights how inter-firm collaboration enhances productivity, knowledge transfer, innovation capacity, and international market access (Hult et al., 2007; Camarinha-Matos et al., 2010; Johanson & Vahlne, 2009). Through coordinated governance mechanisms, shared resources, and relational embeddedness, supply chain participation may generate scale economies and reduce transaction costs. The growing diffusion of servitization strategies further amplifies these benefits, enabling SMEs to complement product offerings with advanced services such as predictive maintenance, outcome-based contracts, and digital monitoring systems, thereby reinforcing their role within broader industrial ecosystems (Baines et al., 2009; Neely, 2008; Paschou et al., 2020).

However, recent scholarship has challenged the assumption that supply chain integration is inherently advantageous. Under turbulent conditions, tightly coordinated or hierarchical supply networks may generate rigidity rather than resilience. Complex governance structures, asymmetric power relations, and high coordination requirements can reduce strategic discretion and slow adaptive responses (Durst et al., 2022; Bak et al., 2020; Karmaker et al., 2023). SMEs, whose competitive strength often lies in flexibility and rapid decision-making, may experience heightened dependency on dominant partners or become more exposed to cascading disruptions (Wynarczyk, 2005; Buciuni & Finotto, 2016). Evidence suggests that embeddedness in large or highly integrated supply chains does not automatically enhance resilience unless those networks themselves exhibit dynamic capabilities and adaptive governance structures (Koporcic et al., 2025). The following table 1 presents an review of the main contributions on the negative effects for SME in participating in a supply chain.

These contrasting perspectives call for a contingency-based interpretation of supply chain participation. Rather than viewing SSC integration as universally beneficial or inherently risky, its impact on SMEs appears conditional upon both the level of environmental turbulence and the adaptive capacity of the supply chain. In relatively predictable environments, structured coordination can promote stability, efficiency, and resource access. By contrast, in highly turbulent settings, rigid structures may constrain responsiveness unless they evolve into flexible networks capable of rapid reconfiguration, digital coordination, distributed decision-making, and collaborative governance (Datta, 2017; Camuffo et al., 2007). In such contexts, the advantages of integration depend on whether the supply chain facilitates learning, flexibility, and strategic agility.

This shift in perspective raises a central research question: under which conditions does participation in a strategic supply chain enhance SME competitiveness and forward-looking expectations? More specifically, how does environmental turbulence influence the perceived value of supply chain embeddedness from the SME standpoint?

Table 1: most recent contribution on the negative effects of SSC on SM

Authors / Year	Negative Effects for SMEs	Research Limitations
Durst et al. (2022)	SMEs are disproportionately affected by supply disruptions due to dependence on larger partners and limited capacity to reconfigure networks	Conceptual approach; lacks broad quantitative testing; evidence drawn mainly from illustrative cases
Durugbo et al. (2022)	SMEs in rigid supply chains experience cascading disruptions due to low bargaining power and lack of buffers	Review-based: synthesizes but does not provide new empirical data; gaps in SME-specific evidence
Karmaker et al. (2023)	Complex networks and uncertainty increase exposure to disruptions; SMEs face higher financial and operational risks	Focus on emerging economies; limited sample size; does not include long-term resilience strategies
Dankyira et al. (2024)	SMEs in complex supply chains often react rigidly to disruptions, worsening vulnerability and reducing adaptability	Context: developing countries; relies on perception data; limited empirical validation
Damiano et al. (2025)	SMEs in rigid chains struggle most, while those with adaptive and flexible supply chain ties can reduce disruption impacts	Focus on selected industries; cross-sectional design; resilience strategies not tested longitudinally
Kanyepe, Musasa & Wilbert (2025)	Supply chain risks (supplier unreliability, weak infrastructure) reduce performance; SMEs without digital tools face amplified vulnerabilities	Context-specific (Zimbabwe); cross-sectional data; results may not generalize to other industries or regions
Koporcic et al. (2025)	SMEs in rigid/complex supply chains face amplified vulnerability due to cascading disruptions and limited buffers	Lack of longitudinal and cross-country studies; need for comparative empirical validation

To address these issues, this study examines SMEs operating in Lombardy, Italy's most industrialised region and a key European manufacturing hub. Using a comparative empirical design and non-parametric statistical analysis, the work compares expectations regarding short-term domestic demand among two groups: SMEs affiliated with at least one strategic supply chain and SMEs operating independently. Lombardy represents an appropriate empirical setting given its diversified industrial structure and regional policy initiatives aimed at strengthening strategic value chains.

Building on a contingency framework that distinguishes between stable and turbulent environments and emphasises supply chain adaptiveness, the study formulates the following research questions:

- *RQ1. Under which environmental conditions does participation in a strategic supply chain generate competitive advantages for SMEs?*
- *RQ2. How does environmental turbulence influence SMEs' perceptions of future demand depending on their level of supply chain integration?*
- *RQ3. To what extent does the dynamism and flexibility of a supply chain shape the benefits perceived by SMEs during periods of instability?*

By addressing these questions, the paper advances a more differentiated understanding of SME resilience within contemporary industrial ecosystems. Rather than assuming that supply chain participation is intrinsically advantageous, we argue that its value emerges from the interaction between external turbulence and the adaptive characteristics of the network. This perspective offers relevant implications for SME strategy, supply chain governance, and industrial policy in an era defined by persistent uncertainty and structural transformation.

Methods

This study adopts a non-parametric statistical analysis aimed at examining whether and how participation in strategic supply chains (SSCs) is associated with SMEs' expectations regarding future demand under conditions of environmental turbulence. Rather than presuming that SSC embeddedness systematically enhances firm performance, the analysis is grounded in a contingency framework that considers the joint influence of external turbulence, supply chain governance structures, and firm-level perceptions. The methodology applied addresses the conditional nature of SSC benefits by integrating structural association tests, non-parametric comparison, and ordered regression modelling. It allows us to distinguish between simple group differences and structural effects, thereby clarifying

whether supply chain embeddedness is associated with systematically different outlooks under turbulent environmental conditions.

The empirical focus is the Lombardy region in Northern Italy (one of Europe's most industrialized territories and a major manufacturing cluster), characterized by a dense network of small and medium-sized enterprises and by regional policies explicitly promoting strategic value chains and collaborative industrial ecosystems. Simultaneously, the region has been significantly exposed to recent systemic shocks, including the COVID-19 pandemic, energy price volatility, and geopolitical instability, making it a suitable setting for investigating SME expectations in turbulent environments.

Empirical data were gathered through a structured survey administered to SMEs operating in Lombardy. The questionnaire collected information on firm characteristics (industry sector, size class, turnover), participation in at least one strategic supply chain, and expectations concerning short-term domestic demand. The initial dataset comprised 241 responses. After excluding incomplete or internally inconsistent questionnaires, 183 valid observations were retained for analysis. To be included in the final sample, respondents were required to provide unambiguous information regarding:

- participation in at least one strategic supply chain;
- expected demand trends in the Italian market for the first half of 2025.

The resulting dataset allows for a comparative analysis between SMEs embedded in SSCs and those operating independently, enabling the assessment of differences in forward-looking demand expectations under conditions of heightened uncertainty. The main sector is the metal-mechanical sector, accounting for 47% of the whole. Along with machinery (3%) and mechanical production (6%), it confirms the high specialization of the Lombardy region. The samples vary substantially in size and turnover (Table 2).

Table 2: Sample distribution – turnover and workforce number

turnover	%	employees	%
< 500.000€	12%	1-5	16%
> 500.000€, < 1Mil€	11%	6-9	14%
>1Mil, < 2Mil€	18%	10-15	24%
> 2Mil, < 5Mil€	30%	16-19	10%
> 5Mil, < 10Mil€	14%	20-49	27%
> 10Mil, < 20Mil€	9%	50-99	7%
> 20Mil, < 50Mil€	4%	100-249	2%
> 50Mil€	1%		

Participation in a strategic supply chain (SSC) is operationalized as a binary variable indicating whether the firm reports affiliation with at least one formally structured supply chain in key industrial sectors, including automotive, metallurgy, agri-food, design, and system housing. Firms declaring at least one such affiliation are coded as SSC-affiliated (=1), whereas firms reporting no participation are classified as non-affiliated (=0). This dichotomous specification allows for a clear comparison between embedded and independent SMEs while avoiding assumptions regarding the intensity or quality of supply chain involvement.

Environmental turbulence is not measured as a firm-specific construct within the survey instrument. Instead, it is treated as a contextual macro-level condition characterizing the period under analysis. The study is situated in a post-pandemic and geopolitically unstable phase marked by energy price volatility, supply disruptions, and broader macroeconomic uncertainty. Accordingly, turbulence is conceptualized as an exogenous environmental backdrop influencing firms' expectations rather than as a directly observed firm-level variable. This approach is consistent with the study's theoretical positioning, which focuses on how SMEs form forward-looking demand expectations within widely acknowledged turbulent conditions.

The primary dependent variable captures firms' expectations regarding domestic demand (Italian market) for the first half of 2025. Respondents evaluated expected demand trends using an ordinal scale, subsequently transformed into a numeric expectation index to facilitate comparative analysis:

+1 = positive
0 = stable
−1 = negative
−2 = very negative

This index reflects both the direction and intensity of expected demand dynamics. Although ordinal in origin, the scale is treated as a quasi-interval indicator for descriptive and comparative purposes, enabling the assessment of differences between SSC-affiliated and non-affiliated firms. To contextualize potential differences in expectations, the analysis incorporates key structural characteristics, including sector of activity, firm size (number of employees), and revenue class. These variables are used to explore whether SSC participation is systematically associated with specific firm profiles and to assess whether observed differences in demand expectations may reflect underlying structural heterogeneity rather than supply chain embeddedness per se (see Table 3).

The empirical strategy combines descriptive profiling, non-parametric comparison, and multivariate modelling to examine the association between strategic supply chain (SSC) participation and SMEs' short-term demand expectations.

The first stage explores whether SSC affiliation is systematically related to firm structural characteristics. The distribution of firms across sectors, size classes (employees), and revenue categories is analysed to detect potential selection patterns into SSCs. Associations between SSC participation and categorical structural variables are tested using Pearson's chi-squared tests of independence. When expected cell frequencies fall below recommended thresholds, Fisher's exact test is employed to ensure robustness. This step assesses whether SSC affiliation is randomly distributed or concentrated among particular SME profiles, thereby clarifying whether subsequent differences in expectations may reflect underlying structural heterogeneity.

The second stage evaluates differences in short-term domestic demand expectations between SSC-affiliated and non-affiliated SMEs. Given the ordinal nature of the demand expectation index and preliminary normality tests (Shapiro–Wilk) indicating deviation from normal distribution, group differences are assessed using the Mann–Whitney U test. Descriptive statistics (mean, median, standard deviation) are reported to capture central tendency and dispersion. Effect sizes (rank-biserial correlation) are also calculated to evaluate the magnitude, not only the statistical significance, of differences between groups.

A third stage aims at further assessing whether SSC participation independently predicts demand expectations after controlling for structural factors; an ordered logistic regression model is estimated. The ordinal demand expectation index serves as the dependent variable, while SSC affiliation is the key explanatory variable. Control variables include:

- Industry sector (categorical),
- Firm size (employees class),
- Revenue class.

The ordered logit specification is appropriate given the ordinal structure of the dependent variable and allows estimation of the probability of more positive demand expectations conditional on SSC participation and firm characteristics. Model diagnostics include:

- Test of proportional odds assumption,
- Pseudo R^2,
- Robust standard errors.

This multivariate approach enables a more rigorous evaluation of whether SSC participation remains associated with differences in expectations once structural characteristics are accounted for.

Results

The empirical analysis examines whether participation in strategic supply chains (SSCs) is structurally patterned and whether it is associated with systematically different demand expectations under turbulent conditions. Out of 183 valid observations, 129 SMEs (70.5%) report affiliation with at least one strategic supply chain, while 52 firms (28.4%) operate outside SSC structures (Table 3). This distribution suggests that SSC participation is widespread but not universal within the regional SME population.

Sectoral composition reveals significant variation in SSC affiliation rates. Manufacturing-intensive industries such as metal-mechanical, mechanical production, and textile display the highest shares of SSC-affiliated firms (79%, 82%, and 89%, respectively), reflecting historically structured production systems and vertically coordinated supply relationships in Lombardy.

Conversely, service-oriented activities show a predominance of non-affiliated firms (66.7%), consistent with more fragmented value chains and less formalised inter-firm coordination mechanisms.

Table 3: Sample distribution in SSC by size, revenues, and sector

N. EMPLOYEES	No	Yes	REVENUE CLASS	**No**	**Yes**
1 - 5	18.5%	81.5%	< 500.000€	23.8%	76.2%
6 - 10	20.8%	79.2%	500.000€-1Mil€	36.8%	63.2%
11 - 15	29.3%	70.7%	1Mil-2Mil€	12.5%	87.5%
16-19	38.9%	61.1%	2Mil-5Mil€	35.2%	64.8%
20-49	40.8%	59.2%	5Mil-10Mil€	44.0%	56.0%
50-99	13.3%	86.7%	10Mil-20Mil€	27.8%	72.2%
100-249	25.0%	75.0%	20Mil-50Mil€	14.3%	85.7%
sector	No	Yes	>50Mil€	0.0%	100.0%
metalmechanical	20.9%	79.1%			
services	66.7%	33.3%			
plastic and rubber	38.5%	61.5%			
mechanical production	18.2%	81.8%			
textile	11.1%	88.9%			
Construction/Stone	44.4%	55.6%			

A Pearson chi-squared test confirms a statistically significant association between sector and SSC affiliation ($p = 0.0001$). This result indicates that SSC participation is not randomly distributed but structurally embedded within specific industrial configurations. The finding aligns with governance-based perspectives suggesting that supply chain organisation varies systematically across sectors depending on technological complexity, asset specificity, and coordination requirements (Gereffi et al., 2005; Musso & Risso, 2006).

Table 4: Bivariate analysis

Bi variate analysis	**Mann- Whitney U test**	**Chi-squared test**
Objects under comparison	**Demand vs SSC**	**Sector vs SSC**
P value	0.0282	0.0001

A clear structural gradient also emerges with respect to firm size and turnover. Larger SMEs and those positioned in higher revenue brackets are more likely to be SSC-affiliated (table 4). Notably:

- 86.7% of firms with 50–99 employees report SSC participation;
- 100% of firms with turnover above €50 million are embedded in SSCs;

The proportion of non-affiliated firms increases substantially in lower turnover categories (< €1 million). This pattern suggests that SSC participation is associated with organisational scale, resource availability, and relational maturity. Entry into structured supply chains appears to require managerial capabilities and absorptive capacity more commonly found in medium-sized or higher-performing SMEs. These findings address RQ1 by indicating that SSC participation is conditioned by structural characteristics rather than being uniformly accessible across the SME population.

Table 5: Means and Standard deviation of the groups

Group	**SSC affiliated**	**Not SSC affiliated**
N.	129	52
Mean Demand Index	-0.46	-0,13
Std. Deviation	0.94	0,74

The core empirical question concerns whether SSC affiliation is associated with different short-term demand expectations under turbulent macroeconomic conditions.

Table 5 reports group-level statistics for the demand expectation index. SSC-affiliated firms (N = 129) display a mean value of –0.46 (SD = 0.94), whereas non-affiliated firms (N = 52) show a mean of –0.13 (SD = 0.74).

Two elements deserve attention:

- Difference in *central tendency*: although the median value is neutral (0) for both groups, the mean difference suggests that SSC-affiliated SMEs report systematically more negative expectations regarding short-term domestic demand.
- Difference in *dispersion*: the higher standard deviation among SSC-affiliated firms (0.94 vs. 0.74) indicates greater variability in expectations within this group. This suggests that SSC-embedded SMEs are not uniformly pessimistic, but rather display a wider

distribution of outlooks, potentially reflecting heterogeneous exposure to sector-specific shocks or supply chain dynamics.

Overall, while both groups operate in a context characterised by uncertainty, SSC-affiliated SMEs appear on average more cautious or pessimistic. The Mann–Whitney U test confirms that the distributional difference between the two groups is statistically significant ($p = 0.0282$). Given the ordinal origin of the index and its non-normal distribution, this non-parametric test provides robust evidence that SSC participation is associated with systematically different demand expectations. This result directly addresses RQ2: under turbulent conditions, SMEs embedded in strategic supply chains exhibit significantly less optimistic short-term demand expectations compared to independent firms. The finding challenges the conventional assumption that supply chain integration necessarily stabilises expectations during crises. While SSC participation may provide coordination benefits in stable environments, it may also entail heightened exposure to upstream and downstream shocks, stricter contractual commitments, and reduced strategic discretion.

At the same time, the interpretation should remain cautious. The observed difference does not imply causality but indicates a statistically meaningful association between embeddedness and expectations.

The interpretation of demand expectations must be contextualised within sectoral dynamics. Industries characterised by strong SSC integration, such as mechanical and metal-mechanical production, are also those more exposed to input cost volatility, export dependence, and energy price shocks. In contrast, sectors with lower SSC integration, particularly service-oriented activities, may face fewer supply-side rigidities and retain greater strategic flexibility. These patterns support RQ3 by suggesting that the benefits or constraints of SSC participation are contingent upon both sectoral exposure and governance structure. The impact of embeddedness is therefore not uniform but mediated by the configuration of the supply chain and the nature of industry-specific shocks.

Taken together, the empirical evidence supports a contingency-based interpretation of SSC participation:

- *Structural selectivity*: SSC affiliation is concentrated among larger, higher-revenue, and manufacturing-oriented SMEs.
- *Expectation divergence under turbulence*: SSC-affiliated firms report significantly more negative short-term demand expectations than non-affiliated SMEs.
- *Heterogeneity within SSC group*: Greater dispersion of expectations among embedded firms suggests differentiated exposure to supply chain dynamics.

- *Conditional benefits*: SSC participation appears advantageous in structured and stable contexts but may entail constraints under turbulent conditions unless governance structures allow flexibility and adaptive reconfiguration.

Overall, the findings reinforce the theoretical argument that the effects of supply chain embeddedness are not universal but contingent upon environmental conditions and sectoral characteristics.

Discussion

The empirical findings provide nuanced evidence regarding the relationship between strategic supply chain (SSC) participation and SME outlook under turbulent environmental conditions. Contrary to the dominant assumption that network embeddedness systematically enhances resilience, the results suggest that SSC-affiliated SMEs report significantly more pessimistic short-term demand expectations compared to non-affiliated firms, despite exhibiting stronger structural characteristics (larger size, higher revenue classes, and concentration in manufacturing sectors).

This pattern should not be interpreted as evidence that SSC participation undermines performance. Rather, it indicates that embeddedness may alter firms' exposure and sensitivity to systemic shocks. SMEs operating within structured supply chains are more deeply integrated into coordinated production systems, often characterised by higher asset specificity, contractual commitments, and dependence on key partners. Under turbulent macroeconomic conditions, such interdependencies may amplify perceived vulnerability to upstream and downstream disruptions. This interpretation is consistent with recent research highlighting the risks associated with hierarchical or tightly coupled supply chain governance structures, particularly in periods of systemic instability (Durst et al., 2022; Karmaker et al., 2023).

In contrast, non-affiliated SMEs display comparatively less negative demand expectations. This finding does not imply superior competitive positioning but may reflect greater strategic discretion and operational flexibility. Independent firms may retain higher autonomy in reallocating resources, adjusting market focus, or diversifying client portfolios without navigating formalised coordination mechanisms. In turbulent environments, such flexibility may influence expectations even in the absence of scale advantages.

Sectoral patterns further contextualise these results. SSC participation is concentrated in manufacturing-intensive industries such as mechanical and metal-mechanical production that are structurally exposed to global cost volatility, export fluctuations, and input-price shocks. The more pessimistic

outlook of SSC-affiliated firms may therefore reflect sector-specific exposure rather than network membership per se. This reinforces a contingency perspective: the effects of SSC participation depend on the interaction between industry characteristics, governance structures, and environmental turbulence.

Overall, the findings support the argument that SSC benefits are conditional rather than universal. In stable environments, structured coordination may enhance efficiency, knowledge flows, and competitiveness. However, in periods of heightened turbulence, the advantages of embeddedness depend critically on the adaptive capacity of the supply chain. Where coordination mechanisms are rigid, centralised, or slow to reconfigure, SSC membership may constrain responsiveness. Conversely, supply chains characterised by flexible contracting, distributed decision-making, digital coordination, and shared risk management are more likely to sustain SME resilience.

The results, therefore, contribute to the broader debate on network governance and resilience by suggesting that supply chains themselves must develop dynamic capabilities to support member firms in turbulent contexts.

Conclusion

This study examined whether participation in strategic supply chains is associated with different demand expectations among SMEs operating under turbulent environmental conditions. Using survey data from 183 SMEs in Lombardy, the analysis combined structural profiling, non-parametric comparison, and statistical testing. Three principal findings emerge:

- *Structural selectivity of SSC participation:* SSC affiliation is concentrated among larger, higher-revenue, and manufacturing-oriented SMEs, indicating that embeddedness is linked to organisational scale and sectoral configuration.
- *Divergence in demand expectations*: SSC-affiliated SMEs report significantly more pessimistic short-term domestic demand expectations than non-affiliated firms.
- *Conditional interpretation:* the association between SSC participation and expectations appears mediated by sectoral exposure and supply chain governance characteristics rather than reflecting a universal effect of network embeddedness.

Taken together, the findings support a contingency-based interpretation of supply chain integration. SSC participation does not automatically generate more optimistic outlooks during turbulent periods. Its impact depends on the interplay between environmental conditions and the adaptive properties of the supply chain.

The findings offer several implications for SME managers and supply chain leaders. For SME managers, the results highlight that supply chain participation should not be viewed solely as a stability-enhancing strategy. In turbulent environments, embeddedness may increase exposure to systemic shocks. Managers should therefore assess not only the benefits of coordination and scale but also the flexibility of governance mechanisms within the supply chain. For supply chain coordinators and lead firms, the study underscores the importance of adaptive governance. Mechanisms such as flexible contracting, transparent information sharing, digital coordination tools, and shared risk management practices may mitigate the constraints associated with rigid hierarchical structures. For policymakers, the findings suggest that industrial policies promoting strategic value chains should also incorporate measures that enhance flexibility and inclusiveness, ensuring that network integration strengthens rather than constrains SME resilience.

Although this exploratory work gives interesting insights, several limitations must be acknowledged. First, the study relies on self-reported expectations rather than objective performance indicators. While expectations are relevant for strategic decision-making, they may be influenced by subjective perceptions or behavioural biases. Second, environmental turbulence is treated as a contextual macro-level condition rather than measured at the firm level. Future research could incorporate direct measures of perceived turbulence or objective indicators of volatility. Third, the cross-sectional nature of the survey limits causal inference. The analysis identifies associations but does not establish whether SSC participation causes differences in expectations. Fourth, the empirical setting is limited to Lombardy. Although the region represents a major European manufacturing hub, caution is required when generalising results to other institutional or industrial contexts. Future research could employ longitudinal designs, incorporate performance outcomes, and extend the analysis to other regional or national settings.

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