

THE INFLUENCE OF COOPETITION STRATEGY ON SMALL AND MEDIUM INDUSTRIES' BUSINESS PERFORMANCE IN INDUSTRIAL CLUSTERS

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ABSTRACT: This study investigates the effect of coopetition strategies on the business performance of small and medium-sized enterprises (SMEs) supporting industrial clusters. The research involved 30 SMEs engaged in metal production processes, selected from a population of 52 companies sharing similar production facilities and expertise. Internal capabilities were measured across four variables: innovation, experience, education, and networking, while coopetition strategies were assessed through marketing network cooperation and production process cooperation. Data were collected using structured questionnaires and analyzed through path analysis. The findings reveal that innovation and networking capabilities significantly enhance business performance both directly and indirectly through coopetition strategies. This study highlights the strategic importance of balancing competition and collaboration among SMEs to strengthen industrial cluster performance. The results offer practical implications for managers seeking to optimize internal capabilities and cooperative strategies within constrained production environments, ultimately contributing to the sustainable development of SME-based industrial clusters.

Keywords: Coopetition Strategy; Supporting Industry Clusters; Business Performance; SMEs

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INTRODUCTION

The manufacturing industry faces significant challenges in managing its supply chains due to global disruptions such as geopolitical conflicts, trade tensions, and the COVID-19 pandemic, which have heightened uncertainty and complexity in economic activities and business operations (AbdulKafi, 2024; Incekara & Incekara, 2024). The uncertain economic conditions during the COVID-19 pandemic began to show improvement in 2021 and 2022. During the COVID-19 pandemic, the United States experience negative growth of -3.5 %, Singapore -5.8 %, South Korea -1.0 %, and Indonesia -2.07 % (Badan Pusat Statistik, 2020). In the third quarter of 2023, the United States economy expanded by approximately 2.9 % year-on-year, while China's GDP grew by about 4.9 % (YoY). During the same quarter, Japan's economy recorded modest growth, South Korea's GDP increased moderately, Singapore's economic growth remained positive, and Indonesia's economy grew at around 4.9 % (YoY), reflecting continued resilience amid mixed global conditions (OECD, 2024; Statistik, 2023).

In order to recover from crises and external disruptions, manufacturing companies must strengthen their managerial practices and operational capabilities to achieve superior business performance (Chowdhury et al., 2021). The traditional industrial logic emphasizing the strategic importance of internal resources and firm capabilities has gradually shifted toward a network-based logic, where accessing and combining external resources through interfirm networks, collaborations, and alliances plays an increasingly significant role in value creation and competitive advantage (Baraldi et al., 2024; Ni & Wang, 2025). This logic makes the boundaries within the organization become unclear, such as who is a competitor, customer and supplier, thus producing a new understanding of business relations and networks. New business relationships allow companies to collaborate with competitors, which is referred to as cooptition theory (Bouncken et al., 2020; Brandenburger & Nalebuff, 1996; Crick, 2018; Zacharia et al., 2019).

Industry manufacturing is sectors that become leading in the Indonesian economy, even in moment covid 19 pandemic. In conditions growth economy growing nationally negative, contribution sector industry manufacturing to product domestic gross domestic product (GDP) in 2020 turned out to be Still experience improvement. Industry manufacturing also becomes source growth the biggest in a way year on year (yoy) in the quarter First year 2021, namely by 1.06%, sector trading by 0.75%, sector transportation and warehousing by 0.57%. In the third quarter of 2023, (Adininggar, 2023), the sector industry manufacturing grow as big as 5.2 percent (yoy). Sector growth industry manufacturing show positive tendencies and experiencing acceleration compared to with second quarter of the year 2023, even sector industry manufacturing in the quarter This capable grow taller compared to growth economy in a way aggregate.

The manufacturing industry that supports industrial clusters is designated as one of the priority sectors for strengthening the national industrial structure, as outlined in the National Industrial Development Master Plan (RIPIN) 2015–2035 (Ministry of Industry of the Republic of Indonesia, 2015), in addition to mainstay and upstream industries. Characteristics/criteria of the supporting industry cluster are: (1) the production results are supplied to the free market/to other industries, (2) there is an increase in added value, (3) it is an import substitute, and (4) generally functions as a sub-contractor. Its characteristics as a sub-contractor company that makes goods to be sold to the free market or to other industries (Business to Business) means that this industrial group must build a network to collaborate, even with its competitors.

The manufacturing industry in the supporting industry cluster is generally capital-intensive due to the high cost of machinery and production equipment. Therefore, the supporting industry cluster generally has limited production capacity. To overcome limited capacity, companies in the supporting industry cluster build networks with various other companies, both formally and informally. Companies in the supporting industry group build production networks in the form of cooperatives, associations, or permanent work partners, so that capacity can be increased through subcontracting or makloon systems. Companies in the supporting industry group generally have regular customers and suppliers and have implemented a cooptition strategy, namely collaborating (cooperation) even with competitors that have similar resources.

Considering its position in a complex production network and business environment, industrial business actors manufacturing Small and medium-scale enterprises can no longer manage their businesses independently. The success of a single company without the support of its network does not guarantee its long-term sustainability (Zheng & Possel-Dölken, 2002). This

study will examine the factors necessary for implementing a coopetition strategy and its impact on company performance. The study was conducted in a small and medium-scale industrial area based on metal machining in a supporting industrial cluster. Companies in this area have relatively similar production facilities and skills, but limited capacity. Therefore, to increase capacity, various companies collaborate, even though they are aware that their collaborators are also competitors.

THEORETICAL REVIEW

Co-opetition strategy occurs when firms simultaneously collaborate on certain business activities while competing in others, combining cooperation and competition to create and appropriate value in inter-firm relationships (Klimas et al., 2025; Monticelli et al., 2024). Competition and cooperation work the same simultaneously between company has appear as phenomenon important in management strategic (Bengtsson & Kock, 2000). The main goal is to create mutually beneficial exchanges and add value to both partners (Brandenburger & Nalebuff, 1996). For decades, companies across various industries have implemented this practice to achieve various strategic objectives (Chai et al., 2020), for example, technology firms have engaged in coopetitive relationships where they collaborate on shared platforms or standards while continuing to compete in other business areas (Osborne et al., 2025; Ritala et al., 2014). Research shows that more than 50% of collaborative relationships (strategic alliances) occur between companies in the same industry or with competitors (Gnyawali & Park, 2009).

Study co-opetition has increase rapidly in three decades last. Growth outside normal from publication about co-opetition reflect growing and continuing interest of researchers worldwide. The increase publication also shows confession co-opetition as topic study the real one. See more in, co-opetition research publications discuss various topics that show that draft co-opetition appear as one of the draft richest and most inspiring in management strategic. Some literature review systematically explains richness, youth, and diversity field study (Czakon et al., 2020). Framework Work The research methods used by researchers are based on various theories which is already established, such as games theory (Brandenburger & Nalebuff, 1996), resources based view theory (Bengtsson & Kock, 2000), network theory (H. Chen et al., 2022), and knowledge management theory (Cristache et al., 2025).

Degree of colaboration and competition can different in connection Co-opetition. There is three type relationship based on weight every behavior, namely domination cooperation, dominance competition, and relationships equality. Bengtsson and Kock (Bengtsson & Kock, 2000) found that If activity second company own long distance from consumers, then company the trend For more collaborative work often. If the activity more near to consumers, such as activity customer service, then they tend for compete more intensive. This Phenomenon is also seen in diversity source power owned. If the company own source unique power. One with others, and every company own perception use together source power no will threaten position competitive, then the labor will stronger.

Co-opetition research has attracted attention as a paradox of simultaneous collaboration and competition in business, and recent literature identifies multiple theoretical perspectives underpinning it, including game theory, the resource-based view (RBV), network theory, and paradox/competitive dynamics (Chim-Miki et al., 2025; Da Silva & Cardoso, 2024). In the corporate context, a network is an agglomeration of cooperative ties between companies, while the resource-based view is a strategy of pursuing strategic resources that can increase a company's competitive advantage (Crick & Crick, 2021).

Recent systematic literature reviews on coopetition research have identified multiple thematic research streams, including studies focusing on innovation performance, knowledge sharing and learning, paradoxical tensions, firm outcomes, supply chain dynamics, and antecedents and determinants of coopetition (Katsaliaki et al., 2024; Klimas et al., 2023). These findings are in line with Czakon et al. (Czakon et al., 2020) who identified six characteristics associated with Co-opetition, namely simultaneous cooperation and competition and the resulting

mutual benefits. Topics such as complexity, dynamics, managerial challenges and industrial restructuring are also discussed as additional characteristics.

Early research on coopetition in the 1990s focused on the contradictory strategies of cooperation and competition (Bengtsson & Kock, 2000; Gnyawali & Park, 2011) and various types of coopetition strategies (Bengtsson & Kock, 2000). Research after the 2010s contributed to the enrichment of more specific dimensions of coopetition (Bouncken et al., 2020). Coopetition strategies has a positive effect on business activity performance, product line coordination, and technological diversity (Bengtsson & Kock, 2000; H. Chen et al., 2021; Crick, 2018; Durach et al., 2020). Strategy coopetition will affect activities innovation and performance company (M. Chen et al., 2021; Elias & Farah, 2021). Hani and Dagnino (2021) explain that that the coopetition strategy already done globally and can increase innovation and performance company.

Developed constructs in this study are internal capabilities (Barney, 1991; Bengtsson & Kock, 2000), coopetition strategies (Da Silva & Cardoso, 2024; Klimas et al., 2025; Monticelli et al., 2024), and firm performance (Cristache et al., 2025; Hamid et al., 2023). The internal capability variables are composed of the constructs of innovation capability (Sulistyo & Siyamtinah, 2016; Tsakalerou et al., 2025), experience (Tsakalerou et al., 2025), education (Tsakalerou et al., 2025), and networking capability (Sasono et al., 2023; Tariq et al., 2024). The research model is shown in Figure 1.

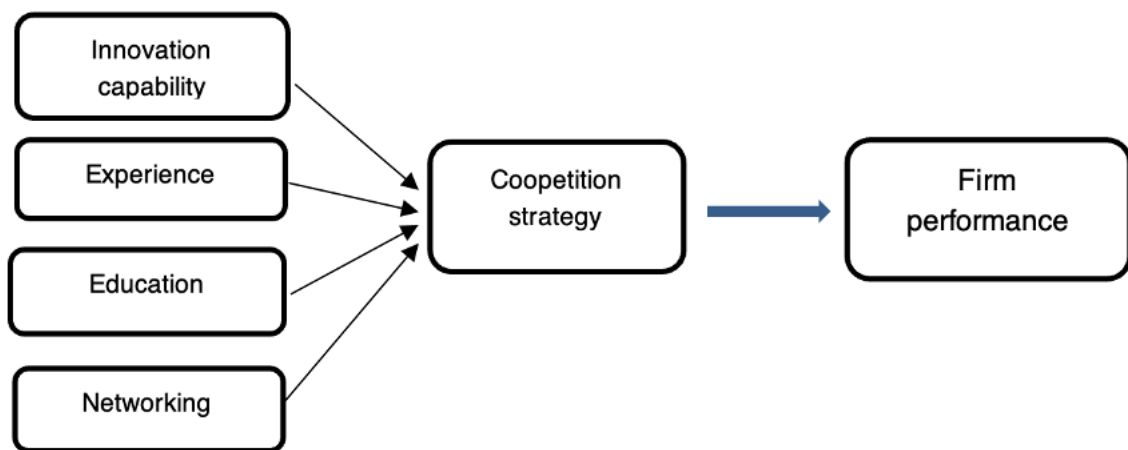


Figure 1. Research paradigm.

The ability to innovate is influenced by the ability to manage a company, including marketing, communication, managerial skills, and business insight (Ndubisi & Matanda, 2011; Sulistyo & Siyamtinah, 2016). The construct of innovation capability in this study includes communication skills, managerial skills, and business insight. The following hypotheses were developed:

H1: Innovation capability has a positive effect on coopetition strategy.

Experience will greatly help companies to perform well and better understand the consequences of actions taken by the company. Understanding these consequences increases the potential efficiency and effectiveness of company activities (Mubyl, 2025; Novita, 2025). The construct of experience in this study includes the dimensions of management experience in business and experience holding various positions in business. The hypothesis built is:

H2: Management experience in business has a positive influence on coopetition strategy.

Management educational background will influence the value creation process in various company activities, such as cost reduction, increasing the number of customers, productivity, and work commitment (Hutauruk et al., 2025). Educational background is one aspect of intellectual capital, which consists of human capital, structural capital, and relational capital that jointly contribute to firm performance (Milojević et al., 2025; Mukaro et al., 2023). The educational construct in this study was built by the dimensions of formal education level and expertise certification. The hypothesis built is:

H3: Educational background has a positive influence on coopetition strategy.

Networking capabilities are a company's capital for establishing relationships with external stakeholders, such as consumers, suppliers, government bodies, and industry partners, and are critical for facilitating innovation and business performance (Pujiyanto et al., 2025; Sasono et al., 2023). Networked companies will be able to access resources and knowledge from partners within their network, thereby accelerating the innovation process within the company. The networking variable in this study is composed of dimensions of active participation in associations and participation as a permanent partner (vendor) of a company. The hypotheses developed in this study are:

H4: Networking of company managers has a positive influence on coopetition strategy.

Dimensions of the co-opetition strategy developed in previous research include mutual benefits, trust, and commitment, which have been identified as key relational mechanisms in collaborative competitive interactions among firms (Sabel et al., 2024; Zulu-Chisanga et al., 2025). Mutual benefits is A working relationship that benefits both parties. Without mutual benefit, trust and commitment are not enough to build a coopetition relationship. Benefits can be obtained from competition or collaboration. The difference is that in competition, a relationship does not require mutual benefit, while collaboration cannot occur without mutual benefit. This difference is based on the fact that a coopetition relationship involves both conflicting competitive motives and shared collaborative interests, since firms cooperate to create value while simultaneously competing to capture it (Gernsheimer et al., 2021; Klimas et al., 2024). In this study, the dimension of coopetition that will be measured is cooperation with competitors in the production and marketing process. The hypothesis developed in this study is that company performance measured is subjective, referring to the perceptions of company staff and managers. The company performance dimensions measured are profit growth and sales growth.

H5: Coopetition strategy has a positive influence on firm performance.

RESEARCH METHOD

This study uses a strategic management approach to analyze *firm performance* in small and medium-scale manufacturing industries in the *supporting* industry cluster is the unit of analysis/object of research. The exogenous variables studied are *internal capability*, which includes innovation capability (X1), management experience (X2), education (X3), and networking ability (X4). The endogenous variables of interest in this study are *coopetition strategy* (M1) and business *performance* (Y). The research subjects, observation units, are the perpetrators business consisting of from the owner's company, leaders at certain *layers*, *board of directors*, *senior leaders*, commissioners as well as senior employees who are estimated understand the business processes of the Manufacturing Industry.

The research was conducted in two stages, namely preliminary research (pre-survey) and follow-up research which was descriptive and verification research. Descriptive research is a non-experimental research design used to systematically describe characteristics of variables or phenomena without manipulation of variables, allowing researchers to observe and measure conditions as they naturally occur and to identify distributions, trends, and relationships among variables (Miksza et al., 2023; Nwabuko, 2024). Descriptive research is aimed at obtaining an overview of the considerations of entrepreneurs in the manufacturing industry regarding *internal capability* and *coopetition* strategies and business performance company. Verification research is intended to determine the relationship between variables through hypothesis testing based on field data. In quantitative research, confirmatory (or verification) research is characterized by the formulation of specific hypotheses before data collection and the use of statistical methods to test if the hypothesized relationships between variables are supported or not by empirical data, enabling researchers to draw conclusions about associations or effects among constructs (Barroga et al., 2023; Bzdok & Ioannidis, 2019). The test aims to evaluate the influence of internal capabilities, including innovation capabilities (X1), management experience (X2), education (X3), and networking capabilities (X4) on *firm performance* directly or through *coopetition strategies*.

The respondents in this study were metal-based manufacturing companies belonging to the supporting industry cluster and located in a small and medium-sized industrial area in Bandung. These companies have similar production facilities and expertise, leading to competition between them. Limited production capacity also encourages these companies to collaborate with each other. Thus, companies in the area simultaneously collaborate and compete, thus categorizing them as implementing a coopetition strategy.

Thirty companies participated in this study, and each respondent was grouped based on work experience, gender, age, and association membership. Measurement data on the dimensions of each variable were measured using a 1-5 Likert scale, with 1 indicating strong disagreement and 5 indicating strong agreement. Each research instrument was tested for validity and reliability using the Pearson product-moment correlation formula.

The examination of the relationship between variables is carried out with the help of statistical data processing software, namely to determine the correlation between variables and the correlation matrix between variables. Stage an analysis performed on results Data processing, including analysis of selected path coefficients, proportional path coefficient analysis, and empirical research factual analysis. Based on the information obtained from the research and the processed data, it can be concluded that internal capabilities influence business performance, both directly and through the mediation of coopetition strategies. Referring to the research findings, it can be recommended the requirements and stages in implementing coopetition strategies for SMEs in supporting industrial clusters.

RESULTS

The research respondents numbered 30 entrepreneurs, consisting of 22 men and 8 women. Five respondents had less than 10 years of experience, 14 with 10-20 years, and 11 with more than 20 years of experience. The respondent classification is shown in Table 1.

Table 1. Respondent classification

Experience (years)	Man	Woman	Sum
<10	3	2	5
10-20	10	4	14
>20	9	2	11
Total	22	8	30

Validity and reliability tests for each research instrument were conducted using the Pearson product-moment correlation formula. Instruments declared valid and reliable were reprocessed using statistical data processing software, resulting in a matrix of variables, as shown in Table 2.

Table 2. Correlation Inter-variables

Correlation matrices inter variable													
	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X11	X12	X13
X1	1	.126	.358	.603	.237	.274	.661	.220	.114	.612	.783	.542	.216
X2	.126	1	.668	.531	.537	.139	.052	.380	.114	.418	-.019	.276	-.060
X3	.358	.668	1	.411	.488	.070	.390	.264	.563	.347	.223	.432	.116
X4	.603	.531	.411	1	.683	.271	.394	.375	.363	.695	.470	.340	.350
X5	.237	.537	.488	.683	1	.128	.457	.340	.308	.505	.201	.176	.353
X6	.274	.139	.070	.271	.128	1	.368	.439	.216	.249	.312	.331	.269
X7	.661	.052	.390	.394	.457	.368	1	.336	.483	.405	.690	.487	.235
X8	.220	.380	.264	.375	.340	.439	.336	1	.496	.425	.347	.266	.096
X9	.114	.114	.563	.363	.308	.216	.483	.496	1	.406	.588	.214	-.231
X10	.612	.418	.347	.695	.505	.249	.405	.425	.406	1	.587	.160	.177
X11	.783	-.019	.223	.470	.201	.312	.690	.347	.588	.587	1	.405	.130
X12	.542	.276	.432	.340	.176	.331	.487	.266	.214	.160	.405	1	.385
X13	.216	-.060	.116	.350	.353	.269	.235	.096	.231	.177	.130	.385	1

Referring to the correlation matrix between variables, a relationship model between variables is obtained as in Figure 2.

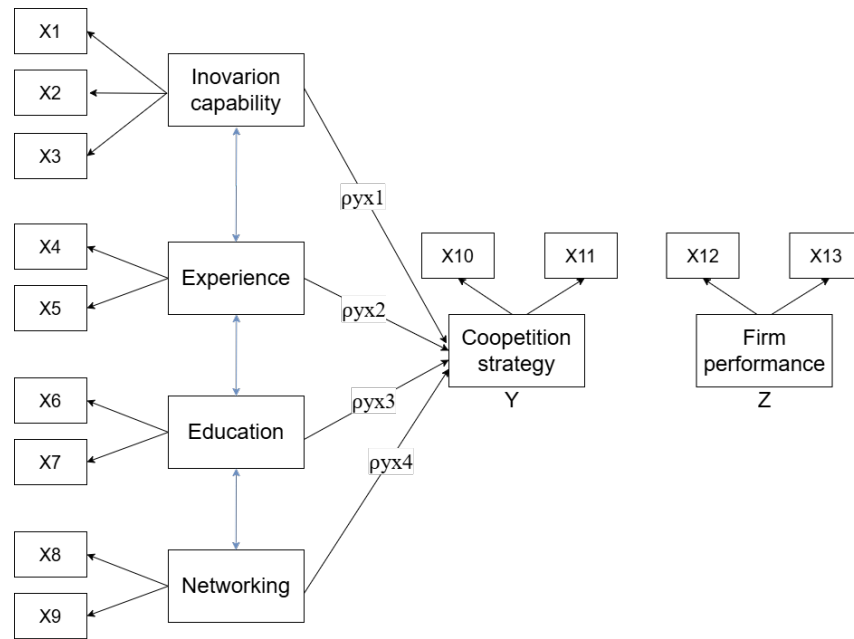


Figure 2. Relationship model between variables

The quantitative data presented in the correlation matrices and path analysis provide robust evidence for these conclusions, linking specific internal capabilities to coopetition outcomes and ultimately firm performance. The structural equation model is as follows:

Coopetition strategy (Y)

$$Y = \text{pyx}_1 X_1 + \text{pyx}_2 X_2 + \text{pyx}_3 X_3 + \text{pyx}_4 X_4 + \varepsilon \dots\dots\dots (1)$$

Y = Coopetition Strategy
X₁ = Innovation Capability
X₂ = Experience
X₃ = Education
X₄ = Networking
pyx = path coefficient X to Y
ε₁ = error/residual

Firm Performance (Z)

$$Z = \text{py}Y + \varepsilon \dots\dots\dots (2)$$

Z = Company Performance
Y = Coopetition Strategy
PzY = path coefficient Y to Z
ε₂ = error/residual

The research method used to test the strength of direct and indirect relationships between various variables is path analysis. Path analysis using a trimming model is used to refine the structural model by removing variables with insignificant path coefficients.

DISCUSSION

The findings show that coopetition strategy in SMEs is shaped less by formal background factors and more by operational capabilities that directly support collaboration, market access, and strategic coordination. Innovation capability emerges as a central driver because SMEs in industrial clusters must communicate product value, adjust to market signals, and respond to competitors who are also potential partners. Communication-based innovation is not merely a

technical capability; it becomes a managerial instrument for building trust, coordinating joint marketing, and sustaining cooperation among firms that compete in similar markets.

Managerial capability also contributes to coopetition by helping firms organize resources, define cooperative boundaries, and maintain business discipline in shared market activities. In this context, coopetition does not arise naturally from proximity alone. It requires managers who can translate informal relationships into structured cooperation. SMEs with stronger managerial capacity are better positioned to identify which competitors can become partners, which activities can be shared, and which areas must remain competitive. This finding strengthens the argument that coopetition is a deliberate strategic practice, not a passive outcome of being located in the same cluster.

Networking capability further reinforces coopetition by enabling SMEs to access wider business relationships, marketing channels, and shared opportunities. Firms that actively develop business relationships are more capable of entering cooperative arrangements without losing their competitive identity. This aligns with recent empirical evidence showing that entrepreneurial networking and innovation significantly influence SME performance, where networking enhances innovation capabilities that, in turn, improve firm outcomes (Sendawula et al., 2023; Sipos et al., 2025). The result also confirms that communication skills, corporate governance, and active network engagement are practical foundations for strengthening business performance through coopetition strategies.

The study also shows that coopetition strategy contributes to business performance through improved market cooperation and sales growth. This means that SMEs gain performance benefits when cooperation is connected to real commercial activity, especially marketing collaboration, customer access, and shared promotional efforts. Coopetition becomes valuable when it helps firms overcome limited market reach, reduce isolation, and create collective visibility. These findings are partially consistent with previous research on SMEs, where innovation and networking capabilities have been found to significantly enhance coopetition strategies and firm performance (Klimas et al., 2025; Pujianto et al., 2025).

The insignificant role of experience and education requires careful interpretation. These results do not mean that experience and education lack value for SME development. Instead, their influence may be absorbed by more immediate capabilities such as communication, managerial ability, and business networking. In cluster-based SMEs, practical routines, peer learning, and shared market exposure may matter more than formal education or length of business experience. This finding contrasts with prior studies that emphasized the role of experience and education in strategic decision-making and value creation (Mukaro et al., 2023; Novita, 2025). The difference may reflect contextual conditions, including industry homogeneity, similar product lines, limited production capacity, and a narrow customer base.

Field observations support this interpretation. Many firms produced similar goods, served relatively similar consumers, and had not expanded toward new potential customer segments. In such a setting, education may not automatically produce strategic differentiation unless it is converted into innovation, managerial discipline, and stronger market networking. Experience may also strengthen routine performance, but it does not necessarily lead to coopetition when firms remain locked into familiar customers and conventional production practices. The central implication is clear: SME performance in industrial clusters depends not on background characteristics alone, but on the capacity to transform knowledge, relationships, and communication into actionable cooperative strategy.

The findings support the hypothesized roles of innovation capability, networking capability, and coopetition strategy in improving firm performance. The hypotheses concerning experience and education were not supported, which indicates that internal capabilities do not influence coopetition equally. This study therefore offers a more refined understanding of SME coopetition. The most decisive capabilities are those that help firms communicate, coordinate, build relationships, and convert collaboration into market performance.

CONCLUSION AND FURTHER STUDY

This study concludes that coopetition strategy improves the performance of small and medium-sized enterprises within industry clusters. Innovation capability, especially communication skill, is the most important factor in strengthening coopetition strategy, followed

by managerial capability and networking capability. These findings show that SME performance is shaped not only by internal resources, but also by the ability of managers and owners to communicate, coordinate, build relationships, and expand marketing networks. The managerial implication is that SME owners should treat coopetition as a deliberate strategy, not as an informal habit among firms in the same cluster. Managers need to improve communication skills, strengthen managerial discipline, and develop wider business networks, while industry associations and local governments should support training in negotiation, collaborative marketing, digital promotion, partnership management, and trust-building.

This study has limitations because it focuses on SMEs within a specific industry cluster and uses a cross-sectional design, so the findings may not fully explain coopetition practices across sectors, regions, or longer periods. The study also examines selected internal capabilities, while other relevant factors such as inter-firm trust, leadership style, digital capability, market uncertainty, and institutional support were not included. Future research should expand the model by adding these variables as mediators or moderators, compare coopetition practices across different industry clusters, and use longitudinal or mixed-method designs. Further studies in agribusiness, creative industries, and technology-based SMEs would also help determine whether innovation capability and communication skill remain dominant drivers of coopetition strategy in different business environments.

ETHICAL DISCLOSURE

All participants provided written informed consent prior to participation. They were informed about the study's purpose, their voluntary participation, the right to withdraw at any time, and the confidentiality of their responses

CONFLICT OF INTERESTS

The authors declare no conflict of interest

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