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Coopetition Engagement and Capability Configurations for Social Reach: An fsQCA Study of a Pakistani Nonprofit Network

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ABSTRACT

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Networked nonprofit organisations often cooperate in service delivery and advocacy while competing for grants, donor attention, legitimacy and visibility. This cross-sectional study examines whether alternative combinations of study-specific coopetition engagement and organisational capabilities are associated primarily with social reach and secondarily with perceived commercial performance. An organisation-referenced key-informant survey collected in July 2018 yielded 418 usable observations from a Pakistani nonprofit network. A seven-factor confirmatory factor analysis preceded fuzzy-set qualitative comparative analysis (fsQCA). The primary theory-guided analytical specification used direct calibration at 2.00, 4.01 and 6.00, a five-case truth-table frequency threshold, .80 consistency and .70 proportional reduction in inconsistency. No single condition was necessary. Eight overlapping pathways were associated with high social reach (overall consistency = .801; PRI = .753; coverage = .909). Four were coopetition-anchored pathways, in which high coopetition engagement was a core condition combined with analytical, emotional or executional capability, or with the absence of strong knowledge-boundary capability. Four were capability-centred pathways in which coopetition engagement was configurationally irrelevant rather than demonstrably absent.

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1.0 Introduction

Nonprofit organisations increasingly depend on relationships with other organisations to address social problems that exceed the resources or jurisdiction of any single actor. Such relationships provide access to specialised knowledge, local legitimacy, volunteers, funding opportunities and coordinated service delivery (Selsky and Parker, 2005; Austin and Seitanidi, 2012; Gazley and Brudney, 2007). Yet potential partners frequently draw on the same donors, compete for the same contracts and seek recognition from overlapping stakeholders. Cooperation and competition can therefore coexist within the same interorganisational relationship, producing coopetition rather than either pure collaboration or pure rivalry (Bengtsson and Kock, 2000; Bouncken et al., 2015).

The nonprofit setting makes this coexistence especially consequential. Normative expectations encourage solidarity, information sharing and collective impact, whereas organisational survival requires differentiation, resource protection and credible claims to effectiveness. Managers may consequently experience the same organisation as both a valued partner and a competitor for scarce resources. Research shows that nonprofit coopetition can support learning, innovation and performance, but it can also create cognitive dissonance, appropriation risk and instability (Curley et al., 2021; Wemmer et al., 2016). Meta-analytic evidence from broader organisational settings likewise indicates that coopetition has no uniformly positive performance effect; its value depends on relational, organisational and contextual conditions (Xie et al., 2023).

A growing literature therefore shifts attention from the presence of coopetition to the capabilities required to manage it. Coopetition capability has been conceptualised as a multidimensional capacity to recognise the simultaneous cooperative and competitive logics, regulate the tensions they generate and act without sacrificing either joint value creation or organisation-specific interests (Bengtsson et al., 2016; Rai et al., 2023). This study separates four organisation-referenced components of that capacity: analytical capability, emotional capability, adaptive executional capability and knowledge-boundary capability. Analytical capability supports interpretation of contradictory demands; emotional capability supports acceptance and regulation of ambivalent feelings; adaptive execution translates interpretation into revised strategies and routines; and knowledge-boundary capability governs what can be shared without exposing core competences.

Existing studies commonly estimate the average independent effect of such capabilities or combine them into a higher-order construct. That approach is valuable but incomplete when capabilities operate jointly. Strong analysis may be useful only when an organisation can tolerate the resulting tension or implement an adaptive response. Execution may create value only when knowledge boundaries prevent uncontrolled leakage. Conversely, one capability may substitute for another in particular organisational settings. These possibilities are consistent with configurational theory, which focuses on conjunction, equifinality and asymmetry rather than on universal net effects (Fiss, 2011; Misangyi et al., 2017).

The outcome side also requires differentiation. Nonprofit social reach refers to extending

services, beneficiaries and geographic coverage. Perceived commercial performance refers to respondents' assessments of revenue, organisational activity, satisfaction and geographic expansion. The label follows the original instrument, although the measure is broader than audited profitability. Because the primary commercial solution did not satisfy the preferred overall standards, social reach is the article's central outcome and the commercial and dual outcomes are retained as secondary analyses.

Pakistan provides a relevant but bounded empirical context. The organisations in this study operated within a network setting under the umbrella of the Free and Fair Election Network (FAFEN), with data-collection assistance from the Forum for Human Rights Pakistan (FHRP). Network membership created opportunities for coordination while organisations remained exposed to donor dependence, resource competition and identity pressures (Saqib, 2019). Prior research in Pakistan has documented both the benefits of interorganisational collaboration and the organisational consequences of aid dependence and external funding relationships (Bano, 2008; Gulshan & Liaqat, 2022; Gulzar and Henry, 2005). The study does not treat the sample as representative of the entire Pakistani nonprofit population; it examines a purposively accessed network-based organisational sample in which coopetition was substantively plausible.

Against this background, the study asks: Which configurations of coopetition engagement, analytical capability, emotional capability, adaptive executional capability and knowledge-boundary capability are associated with high social reach and perceived commercial performance among networked nonprofit organisations in Pakistan? It also examines whether the same conditions identify simultaneous high social and commercial performance and whether pathways to non-high outcomes are configurationally distinct.

The article makes three contributions. First, it distinguishes coopetition-anchored pathways, in which high coopetition engagement is a core condition, from capability-centred pathways in which coopetition is configurationally irrelevant and may therefore be present or absent among covered organisations. Second, it unpacks coopetition capability into analytically distinct components and identifies how they combine as core or peripheral elements. Third, it disciplines the strength of its outcome claims: the evidence is centred on social reach, whereas commercial and dual-performance findings are treated as exploratory or unresolved because they are sensitive to threshold and calibration choices.

2.0 Literature Review

2.1 Nonprofit coopetition in a network setting

Coopetition describes relationships in which organisations pursue partially convergent and partially divergent interests at the same time. Cooperation supports access to complementary resources, knowledge integration and joint problem solving. Competition protects organisational distinctiveness and determines how value, funding and recognition are appropriated. The two logics are interdependent: eliminating competition would transform the relationship into collaboration, while eliminating cooperation would remove the basis for joint value creation (Bengtsson and Kock, 2000).

For nonprofits, the cooperative logic is embedded in mission interdependence. Organisations may

coordinate advocacy, combine specialist expertise or deliver services through coalitions. The competitive logic arises because many organisations rely on overlapping pools of grants, contracts, volunteers and legitimacy. The tension may be difficult to acknowledge because cooperation is normatively valued in the sector, while competition can appear inconsistent with public purpose (Curley et al., 2021). The result is not simply a strategic dilemma but a persistent organisational paradox that must be handled rather than solved once and for all (Bengtsson et al., 2016; Xue et al., 2023).

Evidence from nonprofit sports clubs and social-purpose networks indicates that coopetition can contribute to knowledge acquisition, innovation and performance (Lorgnier and Su, 2014; Wemmer et al., 2016). Research using related Pakistani nonprofit data has also linked coopetition with performance through outside knowledge and an innovative climate (Gulshan and Liaqat, 2023). These findings imply that interaction with competitor-partners is not sufficient by itself (Moshtari, 2016). Organisations must interpret relational tensions, absorb useful information, adapt routines and decide which knowledge can safely cross organisational boundaries (Estrada et al., 2016; Gast et al., 2019).

2.2 A disaggregated capability architecture

Coopetition capability is often presented as an integrated capacity involving paradoxical cognition, emotional management and executional skill (Bengtsson et al., 2016; Rai et al., 2023). Disaggregation is theoretically useful because each component addresses a different problem and may occupy a different place in a sufficient configuration.

Analytical capability concerns the ability to understand why cooperation and competition coexist, identify appropriate domains for each logic, recognise sources of instability and select suitable partners. It reduces the risk of interpreting a competitor-partner as only an ally or only a rival. Emotional capability concerns the ability to understand, accept and remain engaged with simultaneous positive and negative feelings, including trust and distrust. These capabilities are related but not interchangeable: cognitive understanding does not ensure emotional tolerance, and emotional acceptance does not ensure accurate diagnosis of relational risk (Raza-Ullah et al., 2020).

Adaptive executional capability concerns the ability to develop alternative strategies and routines when partnership demands change. It is the behavioural bridge between interpretation and organisational action. Knowledge-boundary capability concerns selective contribution, filtering and protection of information. It is not equivalent to secrecy. Effective boundaries enable useful exchange while preserving core competences, donor intelligence or organisation-specific practices (Estrada et al., 2016; Gast et al., 2019).

A configurational perspective suggests complementarity and conditional relevance rather than a universal additive capability model. Analytical and emotional capabilities may jointly create an interpretive foundation for mission-oriented action. Execution may contribute when embedded in a relational or interpretive architecture. High coopetition engagement may anchor some pathways, whereas in other pathways it may be configurationally irrelevant. Importantly, irrelevance in QCA does not mean absence and therefore does not by itself establish that one

capability substitutes for coopetition (Fiss, 2011; Ricciardi et al., 2022).

2.3 Outcome-specific capability requirements

Social reach and commercial performance place different demands on nonprofit organisations. Social reach reflects the expansion of social services, beneficiary coverage and service locations (Nordin et al., 2022). These outcomes can benefit from relational access and relatively parsimonious capability combinations. Perceived commercial performance includes revenue growth, increased organisational activity, satisfaction and geographic expansion. Converting interorganisational opportunities into these outcomes may require a more comprehensive package that combines interpretation, emotional stability and implementation or protection.

Simultaneous high performance is more demanding because membership in the dual-high set requires strong membership in both the social and commercial sets. It should not be assumed that the intersection can be explained by combining the pathways found for each outcome separately. Mission expansion and commercialisation may draw on different resources or create identity and allocation tensions (Doherty et al., 2014).

2.4 Configurational expectations

The study evaluates four theory-guided configurational expectations rather than translating conventional net-effect hypotheses directly into QCA statements (Greckhamer et al., 2018; Pappas and Woodside, 2021; Di Paola et al., 2025).

Configurational expectation 1: High social reach can arise through coopetition-anchored pathways in which high coopetition engagement is combined with analytical, emotional or executional capability, and through capability-centred pathways in which coopetition engagement is not a defining condition.

Configurational expectation 2: Adaptive execution is more likely to be associated with social reach when it is embedded in a broader relational or interpretive architecture rather than operating as an isolated condition.

Configurational expectation 3: Commercial performance, if a stable solution is identifiable, will require more comprehensive combinations of relational, interpretive, emotional and implementation conditions than social reach.

Configurational expectation 4: Configurations associated with high performance need not be mirror images of configurations associated with non-high performance (Ragin, 2006; Schneider and Wagemann, 2012)

3.0 Methodology

3.1 Research design, context and sample

The study used a quantitative, cross-sectional, organisation-referenced key-informant survey and a theory-guided secondary analysis (Kumar et al., 1993). The organisation was the unit of analysis, and each retained questionnaire represented one organisational observation. The design supports the analysis of contemporaneous set relations; it does not establish temporal or causal effects.

Data were collected in July 2018 within a Pakistani nonprofit network setting under the

umbrella of FAFEN, with FHRP assistance. Purposive sampling targeted managers or organisational representatives expected to possess knowledge of their organisation's relationships with other nonprofits, capability to manage such relationships and organisational performance. The questionnaire instructed respondents to answer with reference to their own organisation and was distributed during the network's annual meeting. The collection procedure requested one questionnaire per participating organisation. Of 509 questionnaires distributed, 418 complete responses were retained, producing an 82.1% usable-questionnaire rate. The anonymised dataset contains 418 unique sequential record numbers, but it does not retain organisation names or registration identifiers; duplicate organisations therefore cannot be independently ruled out retrospectively. The 82.1% rate describes the facilitated collection process and is not interpreted as coverage of the Pakistani nonprofit population.

Archived data identify organisations located in Balochistan, Khyber Pakhtunkhwa, Punjab and Sindh and include founding year, permanent-employee count and respondent-tenure codes. Founding year is available for 408 cases. The current analysis archive does not contain the raw demographic values needed to calculate verified provincial, employee or tenure distributions, and the category-to-code correspondence for tenure is not fully documented. These distributions are therefore not invented. Key-informant competence was encouraged by purposive eligibility and organisation-referenced instructions but cannot be verified retrospectively for every case.

Table 3.1. Verified sample and data-collection characteristics

Characteristic	Verified information
Design	Cross-sectional, organisation-referenced key-informant survey
Context	Networked nonprofit organisations in Pakistan
Sampling and access	Purposive sampling; FAFEN setting
Collection period	July 2018
Distributed / usable	509 / 418 organisational questionnaires
Usable-questionnaire rate	82.1%; not interpreted as national population coverage
Unit of analysis	Organisation-referenced observation; one questionnaire was requested per organisation. Sequential records are unique, but anonymised organisational identifiers are unavailable for an independent duplicate-organisation check.
Geographic coverage	Balochistan, Khyber Pakhtunkhwa, Punjab and Sindh
Archived descriptors	Province, founding year (408 cases), permanent employees and respondent-tenure codes; exact distributions require the original CSV.
Unavailable profiles	No verified respondent-role, sector or nonresponse distribution; tenure code labels are not fully recoverable from the current archive.
Key-informant boundary	Purposive eligibility and organisation-referenced instructions were used, but individual role competence cannot be verified retrospectively.

3.2 Ethics, secondary analysis and analytical distinctiveness

The questionnaire introduction described the academic purpose of the study, stated that participation was voluntary and that responses would be confidential, and informed consent was obtained before completion. The present dataset is anonymised and contains no personally

identifying information. Formal institutional ethics committee approval was not obtained for the original organisational survey. No retrospective approval number is claimed. This circumstance is disclosed so that editors can assess the study under the requirements applicable to their journal.

The data and questionnaire were originally reported in a doctoral thesis completed at Istanbul Okan University (Gulshan, 2020). The thesis used partial least squares structural equation modelling to examine coopetition, fundraising, aggregate performance and a higher-order capability moderator. The present article addresses a different question: it revalidates a seven-factor measurement structure, separates capability components and uses fsQCA to examine equifinal pathways to social reach, perceived commercial performance and their intersection. A related publication examined outside knowledge and innovative climate (Gulshan and Liaqat, 2023); the present article does not reproduce that mediation model. These relationships are disclosed to distinguish legitimate secondary analysis from redundant publication.

3.3 Measures

All focal variables used seven-point response scales. Capability items ranged from 1 (not agree at all) to 7 (totally agree). Performance items ranged from 1 (not at all) to 7 (to a great extent) and were framed as improvements associated with the interorganisational relationship. The questionnaire was administered in English. The archive does not document a formal translation/back-translation procedure or a separate pilot study, and neither is inferred. Construct scores were arithmetic means of the retained items. Full wording is supplied in Appendix A.

The original survey adapted coopetition and capability items from the coopetition literature and reported the complete instrument in the doctoral thesis (Bengtsson et al., 2016; Gulshan, 2020). Performance items were adapted from Coombes et al. (2011). The present item structure was validated before the configurational analysis.

Table 3.2. Measures used in the configurational analysis

Construct	Items	Content and reporting boundary
Coopetition engagement	Coop1, Coop7, Coop8	Intensive cooperation combined with overlap in knowledge needs and funding competition. A three-item, study-specific operationalisation; the nine-item pool is used in robustness tests.
Analytical capability	ANC1-ANC5	Understanding benefits, domains, instability, constructive contradiction and partner selection.
Emotional capability	AMC1-AMC4	Understanding, accepting and embracing ambivalent emotions inherent in coopetition.
Adaptive executional capability	EXC8-EXC9	Alternative strategies and routines for changing or conflicting demands.
Knowledge-boundary capability	EXC4-EXC5	Selective knowledge contribution, filtering and protection of core competences.
Social reach	NOPS1-NOPS3	More social services, more beneficiaries and expansion to new locations. NOPS4 is excluded from the primary measure because it captures grant bidding.
Perceived commercial performance	NOPF1-NOPF4	Perceived revenue, organisational activity, satisfaction and geographic expansion. The measure is broader than audited profitability.

3.4 Measurement assessment and construct reconstruction

A seven-factor confirmatory factor analysis was estimated in R with lavaan using WLSMV and treating the 23 indicators as ordered (Flora and Curran, 2004). Reliability was assessed using Cronbach's alpha and composite reliability; convergent validity through standardised loadings and average variance extracted (AVE); and discriminant validity through latent correlations, HTMT2 and Fornell-Larcker comparisons (Raykov, 1997; Fornell and Larcker, 1981; Henseler et al., 2015). Convergence, residual variances, inadmissible correlations and modification indices were inspected.

Cooperation and competition were initially modelled as separate factors. Their latent correlation exceeded unity (1.03) and HTMT was 1.07, indicating that the data did not support their empirical separation. The primary score therefore combines Coop1, Coop7 and Coop8 and is labelled study-specific coopetition engagement. The indicators represent intensive cooperation, similarity in knowledge requirements and competition for funding. This combination is narrower than a general coopetition scale and may also capture strategic similarity and resource overlap. The reconstruction was developed and validated in the same sample, so it is not presented as an independently validated reusable instrument. The full nine-item composite is consequently reported as a robustness specification.

Because all focal measures came from one questionnaire, common-source variance remains possible (Podsakoff et al., 2003). Confidentiality, organisation-referenced instructions and separate questionnaire blocks provided procedural separation. The seven-factor CFA demonstrates empirical distinctness but is not treated as proof that method bias is absent (Conway and Lance, 2010). A valid marker variable was not available. The current archived output also does not contain a completed 23-item single-factor comparison; a reproducible script accompanying the revision specifies that WLSMV comparison for execution on the original CSV before submission. Until it is run, common-source bias remains an unresolved limitation rather than an eliminated alternative explanation.

3.5 Calibration and fsQCA procedure

fsQCA was conducted in R 4.6.1 using QCA 3.25; measurement analyses used lavaan 0.6-21 and semTools 0.5-8. Five configurational conditions generated 32 logically possible truth-table rows. The primary theory-guided analytical specification used direct calibration with 2.00 as full non-membership, 4.01 as the crossover and 6.00 as full membership (Ragin, 2008; Pappas and Woodside, 2021). Scores near 2 represent clear disagreement or low presence, scores near 6 represent clear agreement or high presence, and the midpoint represents maximum ambiguity. The crossover was placed marginally above 4 so that a neutral response of exactly 4 was treated as just outside rather than assigned exact .50 membership. This transparent convention was reversed to 3.99 in sensitivity analysis; it is not described as preregistered or prespecified.

The same anchors were applied to all five conditions and the two primary outcomes because all were construct means on comparable seven-point scales. The dual-high outcome was the fuzzy intersection of social reach and commercial performance: DUAL_HIGH = min(SOCIAL_HIGH, COMMERCIAL_HIGH). Negated sets were calculated as 1 - membership. DUAL_LOW was the intersection of the two negated performance sets, not merely the negation

of DUAL_HIGH (Ragin, 2006; Schneider and Wagemann, 2012).

Necessity was assessed before sufficiency; .90 was treated as the conventional benchmark for a potentially necessary condition. Primary truth tables used a minimum row frequency of five cases, raw consistency of .80 and PRI consistency of .70. Complex, parsimonious and intermediate solutions were estimated. Positive directional expectations were specified for analytical, emotional and executional capability; no directional expectation was imposed on coopetition or knowledge boundaries. Core and peripheral status was identified by comparing parsimonious and intermediate solutions (Fiss, 2011; Greckhamer et al., 2018; Di Paola et al., 2025).

Robustness checks altered the row-frequency threshold to three and ten, shifted the crossover to 3.99, used stricter .85 consistency and .75 PRI thresholds, applied percentile calibration, substituted the full nine-item coopetition score and included NOPS4 in the social-performance measure. The .80/.70 theory-guided specification remains the primary analysis. Stricter-threshold solutions are interpreted only as sensitivity evidence and are not substituted for an inadequate primary result (Skaaning, 2011; Pappas and Woodside, 2021).

4.0 Findings and Results

4.1 Descriptive statistics and measurement model

All 418 cases were complete on the 23 retained indicators and all item values were within the expected 1-7 range. Table 3 presents construct means, standard deviations and correlations. Correlations were generally modest, except for adaptive execution and knowledge-boundary capability (r = .677), consistent with their related origin in the broader executional/balancing block. Original-score distributions and calibrated-membership distributions are shown in Supplementary Figures S1-S3. Several sets contain a high proportion of cases above the crossover; this prevalence is considered when interpreting the broad coverage and overlap of the social-reach solution.

Table 4.1. Construct descriptives and correlations

Variable	M	SD	1	2	3	4	5	6	7
1. Coopetition engagement	4.74	1.28	1.00						
2. Analytical capability	4.69	0.97	0.191	1.00					
3. Emotional capability	4.72	1.22	0.232	0.116	1.00				
4. Adaptive executional capability	4.52	1.52	0.257	0.217	0.219	1.00			
5. Knowledge-boundary capability	4.61	1.47	0.237	0.221	0.220	0.677	1.00		
6. Social reach	4.90	1.33	0.233	0.161	0.200	0.220	0.189	1.00	
7. Perceived commercial performance	4.46	1.34	0.229	0.175	0.215	0.243	0.176	0.318	1.00

Note. N = 418. Correlations are Pearson correlations among observed construct means.

The seven-factor measurement model fit the data well: chi-square(209) = 235.07, p = .104, robust CFI = .992, robust TLI = .990, robust RMSEA = .019, 90% CI [.000, .031], and SRMR = .033 (Hu and Bentler, 1999). Standardised loadings ranged from .649 to .884. Cronbach's alpha and composite reliability exceeded .70 for all constructs. AVE exceeded .50 except for analytical capability (.462); this construct was retained because its composite reliability was .811, all

loadings exceeded .64 and its content was theoretically important.

All HTMT2 values were below .85; the highest was .800 between execution and knowledge boundaries. The Fornell-Larcker criterion was met for every construct. The highest latent correlation was .801 between those two capabilities, but no inadmissible correlations, negative residual variances or substantial modification indices were observed.

Table 4.2 Measurement-model results

Construct	Loading range	alpha	CR	AVE
Coopetition engagement	.683-.783	.777	.787	.553
Analytical capability	.649-.695	.801	.811	.462
Emotional capability	.735-.848	.852	.856	.599
Adaptive executional capability	.836-.868	.827	.841	.726
Knowledge-boundary capability	.825-.884	.843	.844	.731
Social reach	.676-.838	.800	.805	.582
Perceived commercial performance	.710-.803	.845	.854	.595

4.2 Calibration and necessity

The direct calibration assigned no case an exact .50 membership. Table 5 reports the numbers and percentages above and below the crossover for each principal set. Membership was prevalent for coopetition, analytical capability, emotional capability and social reach, whereas the dual-high set was comparatively balanced. The broad membership prevalence can increase overlap and coverage in sufficiency solutions; coverage is therefore interpreted together with PRI, unique coverage, truth-table row frequencies and calibration sensitivity rather than as evidence equivalent to regression explained variance.

Table 4.3 Primary fuzzy-set membership distributions

Set	n > .50 (%)	n < .50 (%)	Mean membership	Median
Coopetition	310 (74.2%)	108 (25.8%)	0.690	0.812
Analytical	320 (76.6%)	98 (23.4%)	0.686	0.763
Emotional	311 (74.4%)	107 (25.6%)	0.682	0.812
Execution	241 (57.7%)	177 (42.3%)	0.606	0.674
Boundary	274 (65.6%)	144 (34.4%)	0.639	0.812
High social reach	309 (73.9%)	109 (26.1%)	0.708	0.876
High commercial performance	273 (65.3%)	145 (34.7%)	0.620	0.749
Dual high	206 (49.3%)	212 (50.7%)	0.516	0.496

No individual condition reached .90 necessity consistency for any positive outcome. For

high social reach, the largest necessity consistencies were analytical capability (.796), coopetition (.792) and emotional capability (.784). Coopetition produced the highest value for dual-high performance (.851), still below the conventional threshold. These results support a conjunctural rather than single-condition explanation.

4.3 Primary configurations associated with high social reach

The primary theory-guided analysis identified eight intermediate-solution configurations for high social reach. Overall solution consistency was .801, PRI consistency was .753 and coverage was .909. The parsimonious solution was COOPETITION + ANALYTICAL + EMOTIONAL, which identifies those three conditions as core elements when they appear in the intermediate configurations. Table 6 reports the configurations and distinguishes core from peripheral status.

Table 4.4. Primary intermediate solution for high social reach

Path	Coop.	Analyt.	Emotion	Execution	Boundary	Cons.	PRI	Raw cov.	Unique cov.
S1	C+	C+	-	-	-	.855	.807	.674	.011
S2	C+	-	C+	-	-	.849	.800	.668	.013
S3	C+	-	-	P+	-	.861	.812	.604	.020
S4	C+	-	-	-	P-	.848	.766	.325	.013
S5	-	C+	C+	-	-	.848	.796	.672	.017
S6	-	C+	-	P+	-	.858	.807	.602	.024
S7	-	C+	-	-	P-	.855	.772	.332	.011
S8	-	-	C+	-	P-	.857	.774	.325	.012
Overall						.801	.753	.909	

Note. C+ = core presence; P+ = peripheral presence; P- = peripheral absence; - = condition is irrelevant to the pathway and may be present or absent among covered cases. Irrelevance must not be interpreted as absence or substitution. Core/peripheral status is based on comparison of the parsimonious and intermediate solutions. Cons. = consistency; PRI = proportional reduction in inconsistency; cov. = coverage.

S1-S4 are coopetition-anchored pathways because high coopetition engagement is a core condition. Social reach is associated with coopetition when it is paired with analytical capability (S1), emotional capability (S2), adaptive execution (S3) or the peripheral absence of strong knowledge-boundary capability (S4). The final term should not be read as evidence of purposeful openness: low membership in the boundary set may indicate less formalised control, weaker protection routines or deliberate openness, and the data cannot distinguish these possibilities.

S5-S8 are capability-centred pathways because coopetition engagement is configurationally irrelevant rather than explicitly absent. Analytical and emotional capability jointly form S5. Analytical capability combines with execution in S6 and with the absence of strong knowledge-boundary capability in S7, while emotional capability combines with the same peripheral absence in S8. These pathways show that high coopetition is not a defining ingredient

in every sufficient configuration; they do not establish that internal capabilities replace or substitute for coopetition.

Unique coverage is low because the configurations overlap extensively. The pathways should not be presented as mutually exclusive organisational types, and no single pathway accounts for a large uniquely covered subset. Theoretical value lies in demonstrating conjunction and conditional relevance, while the high prevalence of set membership and failure of percentile calibration require a cautious interpretation of the broad solution coverage. Supplementary truth tables report row frequencies, consistency, PRI and anonymised case identifiers; Supplementary Table S8 provides illustrative high-membership and inconsistent cases.

4.4 Commercial, dual and non-high outcomes

The primary commercial-performance minimisation produced five configurations, but the overall solution did not meet the preferred standards: consistency was .768, PRI was .676 and coverage was .786. The study therefore does not claim a robust primary solution for high commercial performance. Under the stricter .85/.75 thresholds, three exploratory configurations emerged, two of which combined coopetition, analytical and emotional capability with either execution or knowledge boundaries. Because these configurations were obtained after changing the thresholds and varied across other specifications, they are treated as exploratory sensitivity evidence rather than as results equivalent to the social-reach solution.

No configuration met the required thresholds for DUAL_HIGH. The result persisted across the principal direct-calibration checks, but it should be interpreted narrowly: the selected five conditions and calibration did not identify a stable sufficient pathway to simultaneous high social and commercial performance in this sample. The analysis does not establish that dual performance is impossible or that any particular omitted condition is necessary.

No sufficient solution was found for low social reach, low commercial performance or dual-low performance. One complex configuration - the simultaneous absence of all five conditions - was associated with NOT_DUAL_HIGH (consistency = .892, PRI = .743, coverage = .189). Its parsimonious expression was the joint absence of coopetition, analytical capability and emotional capability (consistency = .885, PRI = .715, coverage = .247). The modest coverage means that this pathway explains only a minority of organisations outside the dual-high set, so evidence of asymmetry is limited.

Table 4.5 . Summary of primary outcome solutions

Outcome	Primary result	Overall consistency	PRI	Coverage	Editorial interpretation
High social reach	Eight intermediate pathways	.801	.753	.909	Supported as the main configurational finding
High commercial performance	Five pathways, but weak union consistency	.768	.676	.786	No robust primary solution; stricter configurations are exploratory
Dual high	No sufficient solution	-	-	-	Selected conditions did not identify a stable pathway

Low social / low commercial / dual low	No sufficient solutions	-	-	-	No complete evidence of causal asymmetry
Not dual high	Joint absence of all five conditions	.892	.743	.189	Consistent but low-coverage pathway

4.5 Robustness and sensitivity

Table 8 separates evidence that reinforces the social-reach interpretation from evidence that limits generalisation. The social solution was comparatively stable across theory-driven direct-calibration checks, but exact terms and overlap changed. Percentile calibration produced no sufficient high-social or high-commercial solution. Commercial results were more sensitive than social results. These findings make calibration dependence and the prevalence of set membership central qualifications rather than minor limitations. Complete truth tables, score distributions, calibration figures and illustrative cases are reported in the supplementary material.

Table 4.6 Robustness and calibration assessment

Specification	Social reach	Commercial performance	Implication
Frequency n = 3, 5 and 10	Core combinations recur; exact solution varies	Exact combinations vary	Social pattern more stable than commercial pattern
Crossover 3.99 instead of 4.01	Broad structure retained	Some changes	Neutral-point convention is not the main driver
Consistency .85 / PRI .75	Five high-consistency pathways	Three exploratory pathways	Useful sensitivity check; not substituted for the primary model
Full nine-item coopetition	Broad social structure retained	More variable	Three-item result is not solely an item-selection artefact, but content validity remains limited
Social measure including NOPS4	Broad social pattern retained	Not central	Exclusion of grant-bidding item does not wholly determine social findings
Percentile calibration	No sufficient high-social solution	No sufficient high-commercial solution	Main findings depend on theory-driven direct calibration

5.0 Discussion and Conclusion

5.1 Theoretical contributions

The strongest contribution is a qualified configurational account of social reach. High social reach was not associated with one universal capability package. Instead, several overlapping pathways combined relational engagement with interpretive, emotional or behavioural capacity. This helps explain why prior studies report contingent coopetition-performance relationships: the organisational relevance of coopetition depends on the capabilities and knowledge-control conditions that accompany it. Because the overall solution consistency is only slightly above .80 and unique coverage is low, the contribution is best understood as a bounded pattern of conjunction rather than a set of sharply separated organisational types.

The distinction between coopetition-anchored and capability-centred pathways sharpens the interpretation without overstating substitution. In four pathways, high coopetition engagement

was a core condition and appeared with a complementary capability or the peripheral absence of strong knowledge-boundary capability. In four others, coopetition was irrelevant to the minimised expression and could therefore be present or absent among covered cases. The finding cautions against making coopetition the explanatory centre of every successful configuration, but it does not show that capabilities replace coopetition.

The results also refine the multidimensional view of coopetition capability. Analytical and emotional capability sometimes functioned as joint core conditions, supporting an interpretive architecture. Execution appeared as a peripheral complement to coopetition or analytical capability. Knowledge boundaries behaved contingently, but their peripheral absence cannot be equated with strategic openness. It may reflect purposeful sharing, limited formalisation or weak protection capacity. The theoretically defensible conclusion is therefore that the role of knowledge control varies across configurations, not that nonprofits should weaken their boundaries.

Commercial performance did not support an equally strong conclusion. The primary theory-guided union consistency and PRI fell below the preferred standards. Although stricter thresholds produced capability-intensive configurations, elevating them to the same status as the social solution would be post hoc. The appropriate theoretical conclusion is asymmetric in evidential strength: social reach displays equifinality under the primary direct calibration, whereas the proposition that commercial performance requires a more comprehensive package receives exploratory, not definitive, support.

The absence of a dual-high solution is also informative only within clear limits. A substantial number of organisations had membership above .50 in the dual-high set, but the selected conditions did not form a stable sufficient pathway. Simultaneous social and commercial attainment may depend on additional governance, resource or environmental conditions, yet this remains a hypothesis for future research rather than a finding established by the present analysis.

5.2 Implications for networked nonprofits and funders in Pakistan

For managers, the findings do not prescribe a universal maturity model or establish that adopting a particular combination will cause higher performance. The configurations instead suggest areas for organisational diagnosis. A nonprofit deeply involved with competitor-partners may examine whether it possesses analytical sensemaking, emotional regulation or adaptive routines. Organisations in capability-centred pathways should not be assumed to lack coopetition; rather, their level of coopetition was not decisive in the minimised solution.

Knowledge governance should be selective rather than maximised or deliberately weakened. Managers need explicit decisions about donor intelligence, beneficiary information, programme designs and internal procedures. Several primary pathways contained the absence of strong knowledge-boundary capability, but this may represent less formalised control, weak protection capacity or purposeful openness. The study cannot determine which interpretation applies. Practical recommendations should therefore emphasise safe exchange and proportionate protection rather than reducing boundary capability.

For Pakistani funders and network coordinators, generic collaboration training is unlikely to be sufficient. Capacity-building may combine partner assessment, conflict and emotion

management, adaptive project routines and proportionate protocols for information sharing. These are diagnostic priorities suggested by the observed configurations, not experimentally validated interventions. Because the sample is network-based, the recommendations are most directly relevant to organisations operating through coalitions or umbrella networks, not automatically to the entire nonprofit sector.

The weak commercial and dual findings also caution funders against assuming that expanded collaboration or commercialisation automatically strengthens mission outcomes. Programmes that encourage earned income or competitive contracting should include safeguards for mission coherence, governance and organisational learning.

5.3 Limitations and future research

The study is cross-sectional and uses one organisation-referenced key informant per retained record. Set relations are contemporaneous and cannot establish temporal causality. The survey procedure requested one response per organisation, and the sequential records are unique, but anonymised organisation identifiers are unavailable; duplicate organisations cannot be independently excluded. Key-informant eligibility was encouraged through purposive selection and instructions, yet respondent roles were not preserved and competence cannot be verified retrospectively. Longitudinal, multi-wave and multi-respondent designs should examine whether capability configurations precede performance and whether different informants provide convergent assessments.

The sample was purposively accessed through a nonprofit network and is not nationally representative. The current analysis archive verifies the presence of province, founding year, permanent employees and tenure fields but does not contain the raw demographic values or fully documented tenure labels needed to report defensible distributions. A supplied script generates these profiles from the original CSV before submission. The absence of a nonresponse comparison further constrains generalisation. Replication should use a clearly defined sampling frame and preserve respondent-role and organisation identifiers in a confidentiality-compatible form.

The data were collected in 2018. The study tests configurational associations in that period rather than describing the current Pakistani nonprofit sector. Regulatory, funding and interorganisational conditions may have changed. Contemporary replication is required before drawing present-day prevalence claims.

The measurement reconstruction is a substantive limitation. Cooperation and competition were empirically indistinguishable in the original item structure, and the primary study-specific coopetition-engagement measure contains only three indicators selected and validated in the same sample. One indicator captures similarity in knowledge requirements and may represent strategic overlap as well as competition. Although the nine-item robustness check reduces concern that the result is purely an item-selection artefact, independent development and validation of a nonprofit-specific coopetition scale are required.

Adaptive execution and knowledge-boundary capability each contain two items, while perceived commercial performance is broader than objective commercial success. All focal measures came from one questionnaire. The seven-factor CFA supports construct distinctness but

does not eliminate common-source bias, and a marker-variable correction was unavailable. The accompanying diagnostic script specifies a one-factor WLSMV comparison to be completed on the original CSV before submission. Future work should use richer capability measures, multiple informants and objective indicators such as audited revenue, funding diversity, beneficiary counts and geographic coverage.

Calibration sensitivity is the most important analytical limitation. Under the primary direct calibration, large majorities of organisations were above the crossover for several conditions and for social reach. This prevalence contributes to extensive solution overlap, high coverage and very low unique coverage. The social pattern survived several direct-calibration changes but did not appear under percentile calibration. Direct anchors were retained because they map to interpretable points on the seven-point scales, yet the solutions are not calibration-invariant. Replication should establish external qualitative anchors, examine distributions before calibration and report typical and inconsistent cases (Skaaning, 2011; Di Paola et al., 2025).

Finally, no comprehensive low-outcome or dual-high solution was found. Future models could examine governance quality, resource slack, funding diversity, network centrality, trust, environmental turbulence and mission-protection mechanisms, while limiting the number of conditions to avoid sparse truth tables.

5.4 Conclusion

This study provides a bounded configurational account of social reach among networked nonprofit organisations. Several overlapping pathways were associated with high social reach. In some, high study-specific coopetition engagement was a core condition; in others, coopetition was configurationally irrelevant and the pathway was centred on analytical, emotional or executional capabilities. These results demonstrate conditional relevance, not capability substitution, and the peripheral absence of strong knowledge-boundary capability should not be equated with purposeful openness. The evidence is strongest for social reach under theory-driven direct calibration. The primary commercial solution did not satisfy the preferred overall standards, no stable dual-high solution was identified and percentile calibration did not reproduce the social solution. Independent replication, improved measurement and externally grounded calibration are therefore required before broader claims are made.

Contribution

Bella Gulshan: Problem Identification and Theoretical Framework**,** Data Analysis, Supervision and Drafting**,** Methodology and Revision

Conflict of Interests/Disclosures

The authors declared no potential conflicts of interest in this article's research, authorship,and publication.

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