JOURNAL FOR SOCIAL SCIENCE STUDIES
An International Peer-Reviewed Open Access Journal

ISSN (Online): 3006-2071 | ISSN (Print): 3006-2063
Volume 4 • Issue 6 • October 2026

BEYOND THE MODERATOR: RECIPROCAL CALIBRATION IN DIGITALLY MEDIATED B2B EXCHANGE

Hakima[*1], Dr. Abdul Rahim[2], Dr. Faisal Mehmood[3], Dr. Kamran Khan[4], Dr. Muhammad Zada[5], Israr Hussain Raisani[6], Khalid Umer[7]

[*1]*Research Scholar, Management Sciences Department, Alhamd Islamic University, Quetta, Pakistan*
[2]*Registrar, Alhamd Islamic University, Quetta, Pakistan*
[3,4,5,6,7]*Management Sciences Department Alhamd Islamic University Quetta, Pakistan*

[*1]hakeema.hassan100@gmail.com, [2]raheem_qta@hotmail.com, [3]f.mahmood@bangor.ac.uk
[4]phdmanagement.hrm@gmail.com, [5]muhammad.zada@alhamd.pk, [6]israr.raisani@gmail.com
[7]khalidumer742@gmail.com

DOI: https://doi.org/10.5281/zenodo.23432395

Keywords
social exchange theory; reciprocity; reciprocal calibration; B2B relationships; digital mediation; typology; propositions

Article History
Received: *25 June 2026*
Accepted: *16 September 2026*
Published: *17 October 2026*

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Hakima

Abstract

Reciprocity is a condition that business partners constantly calibrate, strengthening exchange only inside a calibration window. It is not a number that they just have more or less of. Although empirical research still treats reciprocity as a single moderating variable measured from one side of the dyad, social exchange theory (SET) views it as the driving force of business-to-business (B2B) partnerships. This paper develops a theory of reciprocal calibration the continuous, dyadic process through which partners align the equivalency, immediacy, symmetry, and visibility of what they give and receive, based on the limitations and unexpected results of Ren et al. (2025), where reciprocity strengthened four of seven exchange pathways, did nothing for three, and was negatively associated with cultural similarity and firm size. We contend that the moderating impact becomes null or negative beyond the calibration window due to over-embeddedness, size-driven dilution, excessive digital interaction, and perceptual asymmetry. We establish a research agenda employing dyadic, configurational, and longitudinal methods and extract 10 propositions, three curvilinear predictions, and a five-regime typology (Calibrated Partnerships, Tacit Reciprocators, Over-embedded Cliques, Transactional Ledgers, Asymmetric Dependencies).

1. INTRODUCTION

Contractual terms alone are rarely enough for business partners to withstand disruption. A notion that favors given today would be reciprocated tomorrow, which is rarely documented, kept many manufacturer-distributor ties intact when supply chains collapsed during the epidemic. One of the most popular perspectives on inter-organizational behavior is SET, which refers to this expectation as the norm

ISSN (Online): 3006-2071 | ISSN (Print): 3006-2063
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of reciprocity (Gouldner, 1960; Blau, 1964; Cropanzano & Mitchell, 2005).

The popularity of reciprocity has outpaced our theoretical understanding of it. In a recent direct test, Ren et al. (2025) surveyed 109 distributors of the 3D printing company eSUN and found that reciprocity enhanced four of seven relationships between exchange outcomes (trust, risk mitigation) and exchange climate (communication quality, social media usage, conflict resolution). It had no effect on the other three. Reciprocity was adversely correlated with business size and cultural similarity, which were not included in the initial model. In a single network, all of the data originated from the distributors' side of the dyad.

These findings cannot be averaged away as noise. They reveal three mysteries that cannot be resolved by a model of reciprocity as a single moderating variable:

- **The selectivity puzzle.** Why does reciprocity amplify the conflict-driven pathways (conflict resolution to trust, and to risk mitigation) but not communication quality to trust, or risk mitigation to trust?
- **The embeddedness puzzle.** Why would cultural closeness, long assumed to ease cooperation, go together with less reciprocity and weaker conflict resolution?
- **The scale and digital puzzles.** Why do larger firms reciprocate less, and why does heavier social media use not translate into better conflict resolution?

We suggest that there is a single solution to all three riddles. Reciprocity is not a characteristic of the relationship; rather, it is a state that partners constantly adjust. We describe four dimensions of reciprocal calibration (equivalence, immediacy, symmetry, and visibility) and demonstrate how each challenge corresponds to a predictable boundary of the calibration window.

The paper makes three contributions. It first transforms reciprocity into a dyadic, multi-dimensional system with explicit thresholds rather than a single moderator. Second, instead of providing post hoc explanations, it transforms the surprising data on culture, size, and social media into curvilinear, testable hypotheses. Third, it provides a five-regime typology of reciprocity, allowing managers to determine which regime they are in and academics to examine configurations.

In that order, the study question and objectives, gaps in the literature, theoretical foundations, propositions, the cluster typology, graphical predictions, a research program, and implications are presented.

2. Research question and objectives

Main research question. In digitally mediated B2B connections, under what circumstances does reciprocity transform the exchange climate into trust and risk mitigation, and under what circumstances does it not?

Q1. What aspects of reciprocity go beyond a single moderating norm?

Q2. What dyadic factors, such as symmetry and visibility, determine whether reciprocity makes an exchange channel stronger or weaker?

Q3. How do digital interaction intensity, business size, and cultural similarity affect the range in which reciprocity operates?

Q4. Which unique reciprocity regimes are there, and how do their results and shock robustness vary?

Research objectives

1. To define reciprocal calibration and rethink reciprocity as a multidimensional, dyadic phenomenon.
2. To identify the boundary conditions (a calibration window) where trade channels are positively moderated by reciprocity.
3. To construct testable hypotheses**, including curvilinear ones,** that account for the results that Ren et al. (2025) were unable to explain.
4. To create a typology of reciprocity regimes that are displayed as outcome profiles on a cluster map.

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5. To establish a research agenda that includes designs capable of testing every hypothesis.

3. Current literature and research gaps

The reciprocity standard and social transaction. According to SET (Blau, 1964; Emerson, 1976; Cropanzano & Mitchell, 2005), parties establish relationships by balancing benefits against costs. Molm et al. (2000) and Molm (2010) shown that reciprocal exchange, in which participants provide without guaranties, fosters greater trust than negotiated exchange under legally enforceable agreements. Gouldner (1960) viewed reciprocity as a universal standard. Reciprocity has rarely been the main concept in supply chains (Griffith et al., 2006; Morgan & Hunt, 1994), but it has frequently emerged indirectly through fairness, dependency, trust, and shared values (Voss et al., 2019).

There are multiple facets to reciprocity. Hoppner et al. (2015) distinguish between the immediacy and equivalency of reciprocal acts and demonstrate how their consequences on the quality of relationships vary by culture. This suggests that reciprocity is multifaceted; nonetheless, B2B studies continue to measure it using a few variables that express a general sense of mutual support. The construct as measured is more in line with interpersonal ties than inter-organizational exchange because all three of the retained reciprocity questions in Ren et al. (2025) deal with personal relationships with the partner's employees.

Embeddedness is reciprocal. According to Granovetter (1985), social ties are intrinsic to economic activity. The paradox of embeddedness was demonstrated by Uzzi (1997): tight relationships enhance coordination up to a certain extent, after which they produce blind spots, complacency, and vulnerability to partner failure. Much of the B2B literature still views cultural similarity as consistently beneficial (Saleh et al., 2014), despite research on in-group favoritism in commercial relationships pointing in the same direction (Shi & Tang, 2015; Jukka et al., 2017).

digital intermediation. In B2B contexts, social media can facilitate follow-up, eliminate distance, and expedite communication (Diba et al., 2019; Karampela et al., 2020). Excessive engagement can lead to conflict and divert partners from their primary activity, according to evidence (Massey & Dawes, 2007; Fang et al., 2011). It is unknown how reciprocity interacts with digital interaction.

scale and size. Large organizations react to conflict more slowly (Corsi et al., 2019), and managers of small enterprises can develop personal relationships that reinforce reciprocity, a mechanism that dilutes as firms grow (Hu & Korneliussen, 1997).

where the evidence leaves us. The table connects each of Ren et al. (2025)'s shortcomings or surprising findings to the present explanation and the theoretical gap this paper fills.

Gap	Evidence in Ren et al. (2025)	Explanation currently offered	Theoretical opening here
Reciprocity is one-dimensional	Three personal-tie items form the reciprocity scale	None; construct treated as unitary	Four dimensions: equivalence, immediacy, symmetry, visibility
Moderation fails on three paths	H5a, H5d, H5g not supported	B2C versus B2B; inequitable treatment	A symmetry threshold below which reciprocity stops moderating
Culture reduces reciprocity	Cultural similarity negatively related to reciprocity and conflict resolution	In-group favouritism; over-idealised bonds	Inverted-U relationship, flattened by governance

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Gap	Evidence in Ren et al. (2025)	Explanation currently offered	Theoretical opening here
Size reduces reciprocity	Firm size negative on reciprocity, conflict resolution, risk mitigation, trust	Personal ties dilute	Boundary-spanner density as the mechanism
Social media does not help conflict resolution	H4b not supported	Excessive interaction	Interaction-intensity inverted-U, shifted by reciprocity
One side of the dyad	Distributor data only	Acknowledged limitation	Reciprocity asymmetry as an explicit construct
One network, one time point	Single-network cross-section	Acknowledged limitation	Dynamic calibration under shock

4. Theoretical foundation: reciprocal calibration

Definition. In the ongoing, dyadic process of reciprocal calibration, trading partners align and communicate to one another how much they contribute, when they anticipate a return, how fairly the load is distributed, and if each side can recognize the other's efforts. The relationship is deemed calibrated when both partners agree that these four dimensions fall within a suitable range. The calibration window is the name given to that range.

Four dimensions of reciprocity

Dimension	Meaning	Anchor in prior work	Indicator to measure
Equivalence	Return judged roughly equal in value to the benefit received	Hoppner et al. (2015); Molm (2010)	Perceived value of returns versus favours given
Immediacy	Time lag partners accept before a return is expected	Hoppner et al. (2015)	Tolerated delay; expectation of repayment window
Symmetry	Both partners perceive the same balance of giving and receiving	Griffith et al. (2006); Ren et al. (2025), limitations	Gap between manufacturer and distributor ratings
Visibility	Contributions are noticed, acknowledged and talked about	Ren et al. (2025), managerial implications ("reciprocal awareness")	Frequency of explicit acknowledgement; shared records of help given

Three mechanisms.

• **Signaling.** Because visibility turns private goodwill into common information, an act of aid boosts the partner's confidence that disagreements will be resolved rather than exploited (Graça et al., 2015).

• **Ledgering.** Equivalence and immediacy set how partners keep mental accounts. Tight ledgers support accountability but crowd out goodwill; loose ledgers invite free-riding.

• **Governing.** Routines such as joint reviews and escalation rules substitute for the personal knowledge that fades with scale or complacency.

The calibration windows. Reciprocity can only positively alter an exchange pathway when symmetry and visibility are above a minimum

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threshold and embeddedness remains below a maximum threshold. Goodwill cannot be recognized or returned when there is under-calibration (bad symmetry, low visibility). Over-calibration, which permits partners to lower their guard and prevents reciprocity from dictating behavior, is exemplified by extreme embeddedness and intense involvement. The window clarifies the selectivity conundrum (reciprocity matters most when spouses must mend something) and the embeddedness conundrum (too much closeness escapes the window).

Boundary conditions. The window changes according to the relationship's level of shock, the firm's size, the degree of cultural similarity, and the level of digital involvement. Propositions 5 through 9 explain these movements.

5. **Propositions and conceptual model**. The model preserves the exchange-climate-to-exchange-outcome logic of Ren et al. (2025) while altering how reciprocity enters in. There is no longer reciprocity with a single moderator. The calibration window, influenced by shocks, firm size, cultural similarity, and the level of digital involvement, determines the moderating effect of this calibrated, four-dimensional condition (equivalence, immediacy, symmetry, and visibility).

Theme A: Reciprocity as a multi-dimensional mechanism

P1. When all four dimensions are high, reciprocity moderates the relationship between exchange climate and exchange outcomes more strongly than when any one component is high alone. A scale that averages dimensions obscures their interplay since dimensions are complementary.

P2. The positive moderating effect of reciprocity on the relationship between conflict resolution and trust is strengthened by reciprocal visibility. While tacit goodwill keeps partners in the dark, acknowledged assistance increases trust that disagreements will be resolved amicably.

P3 (the threshold for symmetry). Reciprocity no longer moderates the communication quality to trust link or the risk mitigation to trust link below a minimal level of reciprocal symmetry between the two partners, and it may even weaken them. The moderating role is eliminated when one side feels that it contributes more than it receives.

P4 (foundation versus repair). Compared to pathways that establish a baseline (communication quality to trust), reciprocity more significantly moderates pathways that follow a disturbance (conflict resolution to trust, conflict resolution to risk mitigation). Prior to serving as a foundation, reciprocity serves as a repair amplifier.Theme B: Culture, scale and digital intensity shift the window

P5 (paradox of embeddedness). Reciprocity and cultural similarity have an inverted U connection. Moderate resemblance increases reciprocity and facilitates comprehension. High similarity reduces reciprocity and conflict resolution by fostering in-group favoritism and slack oversight.

P6 (flattening of governance). The negative slope of P5 is lessened by formal reciprocity-monitoring procedures (joint reviews, shared acknowledgment logs, escalation guidelines). Culture-based trust no longer provides the monitoring that governance does.

P7 (dilution of scale). Reciprocity decreases with firm size because more people have less personal links. When the company uses digital technologies to personalize communication or has a larger density of dedicated boundary spanners (account managers per partner), the reduction is less.

P8 (paradox of intensity). There is an inverse relationship between the frequency of social media use and the effectiveness of dispute resolution. Because partners who trust each other's intentions can tolerate more contact before it becomes noise or friction, reciprocity raises and moves the peak to the right.

Theme C: Dynamics and configurations

P9 (amplification of shock). Reciprocity's moderating influence on the exchange-climate-to-outcome connections increases for calibrated

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relationships and decreases for low-symmetry relationships during a disruption. Shocks reveal miscalibration and increase the stakes of reciprocity.

P10 (effects of the regime). Relationships can be classified into different reciprocity regimes based on their symmetry, visibility, and embeddedness. The impact of a particular managerial intervention varies depending on the regime, as do trust, risk mitigation, and shock resilience (Section 6).

Summary of propositions

Proposition	Predicted relationship	Form	Explains in Ren et al. (2025)
P1	Four reciprocity dimensions together raise moderation	Complementary interaction	Single-scale limits
P2	Visibility x conflict resolution to trust	Positive moderation	H5f supported
P3	Symmetry threshold on communication and risk paths	Threshold	H5d, H5g not supported
P4	Repair paths exceed baseline paths	Differential moderation	H5b, H5c, H5e, H5f versus H5a, H5d
P5	Cultural similarity to reciprocity	Inverted U	Negative correlation, culture
P6	Governance changes the P5 slope	Moderated curvilinear	Over-idealised bonds
P7	Firm size to reciprocity, via boundary spanners	Negative, mediated, moderated	Size effects
P8	Interaction intensity to conflict resolution	Inverted U, shifted by reciprocity	H4b not supported, H5b
P9	Shock x calibration	Amplification versus erosion	Pandemic context
P10	Regime membership to outcomes	Configurational	Selectivity across paths

6. A typology of reciprocity regimes

The assertions imply that relationships range from weak to strong reciprocity. Three characteristics are used to categorize them into regimes: the degree of symmetry and reciprocity in transactions, the degree to which it is visible to both participants, and the degree to which the relationship is ingrained in cultural or personal bonds. Five symmetry and visibility regimes are mapped in Figure 1, with embeddedness represented by bubble area.

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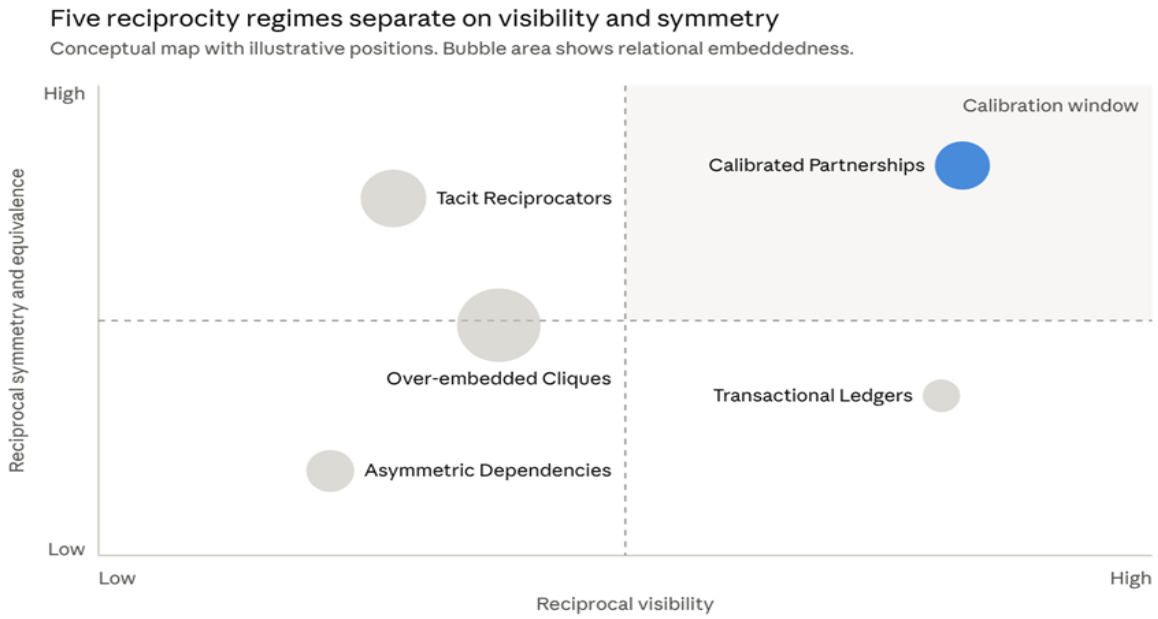


Figure 1. Reciprocity regimes. Conceptual, illustrative positions derived from Propositions P1 to P10; not estimated from data.

According to the focus group in Ren et al. (2025), eSUN acted on a variety of exchange-climate elements without being explicitly aware of them. This pattern is known as *tacit reciprocity*: generosity is genuine and reciprocated, but it is not expressed, so it does not yet reinforce every path.

Over time, regimes shift. Through visibility norms, governance can attract Tacit Reciprocators to Calibrated Partnerships. The window was over-embedded with cliques. Shocks can drive interactions into asymmetric dependence when the burden of adjustment is distributed unfairly (P9).

Regime	Profile	Moderating effect of reciprocity	Trust and risk mitigation	Resilience under shock	Priority move
Calibrated Partnerships	Symmetric, visible, moderately embedded	Strong on repair and baseline paths	High and stable	Strengthens (P9)	Keep ledgers loose; keep acknowledgement routines
Tacit Reciprocators	Symmetric but unspoken	Positive on repair paths, weak elsewhere	Medium to high; fragile when key people leave	Medium	Make reciprocity visible: acknowledgement routines, shared records
Over-embedded Cliques	Very high cultural or personal closeness,	Null or negative (P5)	Trust high, risk mitigation weak	Low to medium; blind spots	Add governance; audit favouritism (P6)

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Regime	Profile	Moderating effect of reciprocity	Trust and risk mitigation	Resilience under shock	Priority move
	relaxed monitoring				
Transactional Ledgers	Visible, tight accounting, low embeddedness	Narrow and short-term	Trust capped; risk handled by contract	Medium; depends on contract	Lengthen time horizons; add goodwill gestures
Asymmetric Dependencies	One side feels it over-gives; low visibility	Null or negative (P3)	Low	Low; rising exit intentions	Rebalance roles; surface the asymmetry in open dialogue

7. Graphical predictions

Two propositions make curvilinear predictions that the linear models in Ren et al. (2025) could not detect. Both pictures are theoretical; rather than depicting approximated values, they represent the shape that each proposition predicts.

Cultural similarity and reciprocity. Moderate similarity increases reciprocity, while high similarity decreases it. A sample concentrated on the right of the curve, as when Chinese distributors serve a Chinese manufacturer, would show the negative association Ren et al. (2025) report. Formal governance lifts the right-hand tail.

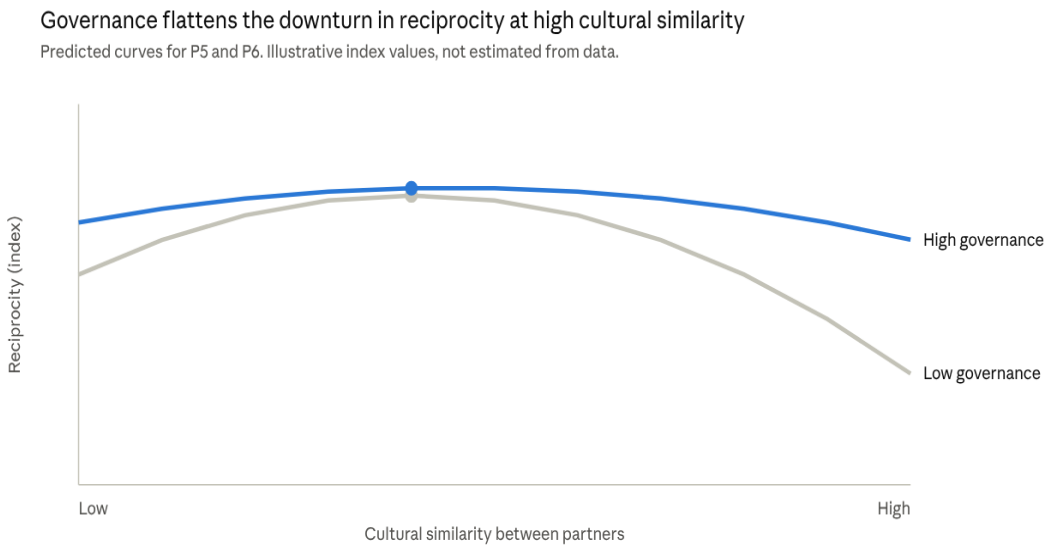


Figure 2. Predicted inverted-U between cultural similarity and reciprocity (P5), and the flattening effect of governance (P6). Illustrative curves.

Interaction intensity and conflict resolution. Increased contact is beneficial up to a certain extent, after which friction and noise levels increase. Because couples who trust each other's intentions permit more contact, reciprocity rises the curve and shifts that point to the right. The

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pattern underlying the unsupported H4b would not be found in a study that simply sampled the descending portion of the low-reciprocity curve.

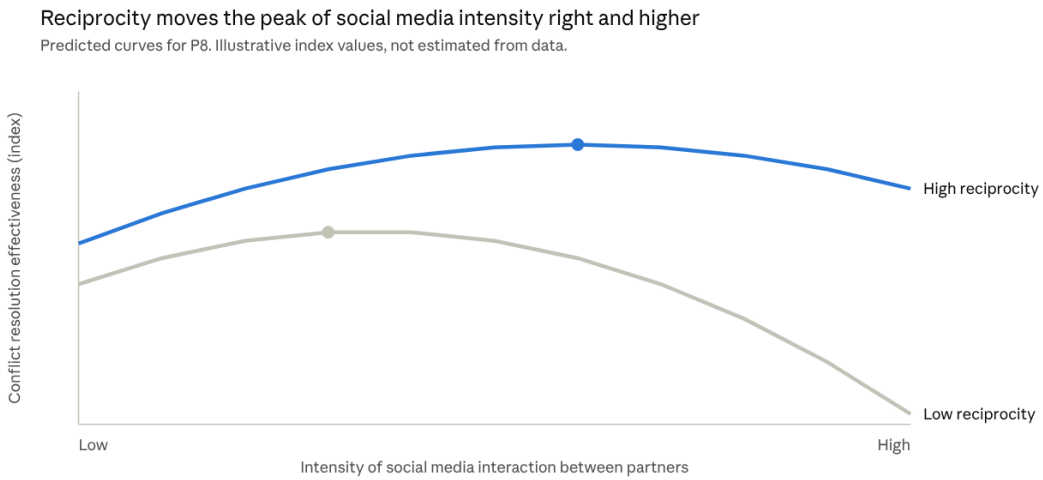


Figure 3. Predicted inverted-U between social media interaction intensity and conflict resolution effectiveness, shifted by reciprocity (P8). Illustrative curves.

Testing either curve requires a quadratic term and a test of whether the turning point lies within the observed range (Haans et al., 2016), not merely a significant linear slope.

8. Research agenda: how to test the propositions

Each proposal requires a design that Ren et al. (2025)'s single-sided, cross-sectional survey was unable to supply..

Propositions	Design	Data	Analysis
P1, P2	Paired manufacturer–distributor survey with a four-dimension reciprocity scale (interpersonal and organisational items kept separate)	Matched dyads across several manufacturers	Actor-partner interdependence model (Kenny et al., 2006); interaction terms across dimensions
P3	Dyadic perception-gap study	Both sides rate the same exchanges	Polynomial regression and response surfaces (Edwards & Parry, 1993); threshold or segmented regression
P4	Pathway comparison within one sample	Repair-type versus baseline-type exchange episodes	Multi-group path models; moderated mediation
P5, P6, P7	Multi-network, multi-country sample with varied cultural distance	Distributors of several manufacturers; boundary-spanner	Multilevel models with quadratic terms and turning-point tests

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Propositions	Design	Data	Analysis
	and firm size	counts; governance routines	(Haans et al., 2016)
P8	Digital trace plus survey	Message and platform-use logs matched to conflict episodes	Curvilinear mixed models; interaction with reciprocity
P9	Longitudinal panel spanning a disruption	Before, during and after waves	Latent change and cross-lagged models
P10	Configurational and person-centred analysis	Symmetry, visibility, embeddedness, outcomes	Latent profile analysis; fuzzy-set qualitative comparative analysis (Ragin, 2008; Fiss, 2011)

Two measurement points need to be considered. First, the reciprocity scale should differentiate between interpersonal reciprocity (relationships with employees) and organizational reciprocity (between firms), since the two may relate differently to size and culture. Second, as symmetry can only be evaluated using data from both partners, manufacturer access is required for any P3 and P9 test.

9. Contributions and implications

9.1 Theoretical contributions

Four contributions to the study of B2B relationships and social exchange theory are made in this publication. Reciprocity is first moved from the periphery to the core of the theory. Previous research uses a few things from one side of the partnership to quantify reciprocity as a single moderating variable. This is replaced by the idea of reciprocal calibration, which comprises three methods (signaling, ledgering, and governing) and four dimensions (equivalence, immediacy, symmetry, and visibility). This explains why the same norm might increase some trade pathways while leaving others unaffected, filling a long-standing gap in SET where reciprocity is crucial in argument but thin in measurement.

Second, by defining the parameters in which reciprocity operates, the paper transforms seeming exceptions into predictions. The lack of social media use to enhance dispute resolution, as well as the negative correlations between cultural similarity and business size and reciprocity, are typically viewed as inexplicable surprises. We demonstrate that they stem from an intensity contradiction in digital contact, an embeddedness paradox (Uzzi, 1997), and the dilution of human relationships as businesses expand. Instead of merely determining if reciprocity is helpful on average, the concept of a calibration window allows researchers to forecast when it will be helpful and when it won't.

Third, reciprocity is treated in the study as a dynamic characteristic of the pair. It advances SET from single-respondent, cross-sectional designs to dyadic and dynamic ones by introducing symmetry as a threshold condition and shock amplification as a dynamic one. It advances SET toward dyadic and longitudinal research rather than single-respondent, cross-sectional designs. The ideas on repair and baseline pathways also make clear the order in which reciprocity functions: it supports routine trust only after amplifying the repair of disturbances.

Fourth, a configurational view is added in the work. The five regimes—Calibrated Partnerships, Tacit Reciprocators, Over-embedded Cliques, Transactional Ledgers, and Asymmetric Dependencies—provide researchers with a unit of analysis that goes beyond variable-by-variable

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moderation and allow theory to determine which treatments are appropriate for different types of relationships.

9.2 Managerial implications

The main takeaway for managers is that reciprocity should not be taken for granted just because a relationship is amicable or long-standing; rather, it should be managed as something partners maintain in balance. Making reciprocity apparent is the first practical step. Goodwill is genuine but unspoken in many partnerships, so it does not yet shield the relationship from strain. Tacit reciprocators can advance toward calibrated partnerships by publicly naming contributions, maintaining shared records of favors and support, and acknowledging assistance during joint reviews.

Controlling intimacy is the second phase. When partners have long-standing personal relationships or share a culture, trust may become an excuse to stop checking. In these kinds of interactions, managers should implement routines that address what familiarity has stopped doing, such as frequent reviews, explicit escalation guidelines, and recurring checks for favoritism. Strong bonds are beneficial, but only when they are supported by this kind of self-control.

Third, as businesses expand, they should consider how to maintain personal relationships. Instead than depending on impromptu goodwill, large manufacturers and distributors should designate dedicated relationship owners to each significant partner and use digital tools to personalize communication, as they tend to lose the interpersonal links that sustain reciprocity. Digital communication is covered in the fourth step: sending out additional messages is not a good idea. Since excessive contact between partners with poor reciprocity can increase friction rather than resolve dispute, partners should agree on a rhythm and a purpose for each channel and only increase the intensity when mutual trust grows.

Lastly, managers ought to examine the relationship from both perspectives. Gaps in perceived balance can be identified early by asking manufacturers and distributors the same reciprocity questions and comparing their responses. Because shocks increase the stakes of reciprocity and reveal miscalibration, such a gap is an early warning sign of the Asymmetric Dependencies regime and is especially important during disruption.

10. Limitations and conclusion

This paper is conceptual in nature. Figures 1 through 3 are theoretical representations rather than estimations; the construct definitions require scale development, and their claims are untested. Additionally, because the theory is based on a single empirical investigation of a single network, some of the patterns it explains might be unique to that context. Before submitting, reference information should be compared to the original sources.

When partners calibrate reciprocity, it is most important. The eSUN results demonstrate that in large or culturally close organizations, the same norm can coexist with weaker links, strengthen some paths, and leave others unchanged. This pattern is explained by reciprocal calibration as the edges of a window: for reciprocity to function, symmetry and visibility must be high enough, while embeddedness and interaction intensity must be moderate enough. The next step for SET in B2B research is to test that window using dyadic, curvilinear, and longitudinal designs.

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