From anxiety to assurance: a mixed-methods journey into service innovation, trust and customer relationships

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Abstract

Purpose – Grounded in Resource Dependence Theory and Social Exchange Theory, this study aims to examine the relationship between service innovation, trust dimensions (competence, contractual and goodwill) and relational performance. In addition, it analyzes the mediating role of trust types and the moderating effect of relationship anxiety. The authors also analyze various configurations that lead to higher relational performance and different dimensions of trust.

Design/methodology/approach – This study uses a mixed-methods approach, integrating quantitative data from 232 managers of top 500 organizations and qualitative insights from in-depth interviews with five suppliers and five customers. Quantitative data is analyzed using partial least squares structural equation modeling (PLS-SEM) and FsQCA, while qualitative data is examined through thematic analysis.

Findings – PLS-SEM results indicate that competence trust is the only trust dimension mediating the service innovation-relational performance link, while relationship anxiety unexpectedly strengthens the relationship between service innovation and trust. Service innovation positively influences all trust types, which in turn enhances relational performance. FsQCA findings highlight that positive service innovation and the negation of relationship anxiety are central to trust formation and relational performance. Qualitative insights further reveal that buyers prioritize competence over goodwill and contractual trust, with long-term business to business (B2B) relationships and technical proficiency overriding the effects of relationship anxiety.

Originality/value – This study advances the literature by linking suppliers' service innovation to relational performance, addressing prior research calls and incorporating diverse outcome variables. It further demonstrates how different trust dimensions yield distinct effects in B2B relationships, refining our understanding of trust–performance relationships. In addition, it contributes by examining mediators and introducing relationship anxiety as a moderator, offering new insights into its impact on relational outcomes.

Keywords Service innovation, Trust, Business-to-business services, Mixed-methods

Paper type Research paper

Introduction

Service innovation empowers organizations as a core competency to adapt, differentiate and excel in a competitive market (Heinonen, 2024; Rabetino *et al.*, 2024). As firms strive to expand their service offerings (Kowalkowski *et al.*, 2024), service innovation is crucial for the B2B customer–provider relationship because it allows the supplier to continually enhance and change the service they provide to better match the customer's demands and preferences (Gustafsson *et al.*, 2020; Opazo-Basáez *et al.*, 2022). Human centricity has become central to service innovation, as service exchanges are inherently social and require attention to long-term relational outcomes (Rosenbaum and Russell-Bennett, 2021). Actively involving customers in innovation processes enhances relevance, effectiveness and value creation (Heinonen, 2025). Recent work distinguishes between interactive innovations that directly elevate customer value and supportive innovations that improve internal processes to indirectly contribute to value (Salunke *et al.*, 2019; Casidy *et al.*, 2020; Gustafsson *et al.*, 2020). Relational performance, reflected in long-term orientation, purchase intentions and reduced switching likelihood, strengthens when customers perceive that their needs are consistently addressed (Chen *et al.*, 2013). This perception builds trust and facilitates durable buyer–supplier relationships.

With this focus, studies on service innovation have focused on the structure of supplier–customer relationships (Barrios *et al.*, 2023; Wang *et al.*, 2020a). Relations with suppliers, especially managers and technical personnel who have an active role in decisions, play an essential role in services (Ganguly and Roy, 2021). In these relationships, trust is one of the most important factors, which ensures the participation of the parties in the process, minimizes the perception of risk and ensures the

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establishment of an innovative ecosystem (Steinbruch *et al.*, 2021). As such, building long-term supplier–customer partnerships requires trust (Maestrini *et al.*, 2021), making it possible for the provider to rely on the client for high-quality goods or services and for the client to rely on the client for consistent business (Corral de Zubielqui *et al.*, 2019). Traditionally, trust has been studied as a unified construct (e.g. Isaeva *et al.*, 2020), acting as a vital mediator in a variety of relationships (Fatima *et al.*, 2018). On the other hand, recent research has proposed a three-factor trust model, implying that each dimension has a distinct effect on the outcomes (Fatima *et al.*, 2018; Kayeser Fatima and Abdur Razzaque, 2014; Zhang and Li, 2019). Although service innovation and its role in supplier–customer relationships have been widely studied, little is known about how it influences relational performance through distinct trust dimensions in supplier–customer relationships (Singh *et al.*, 2020; Witell *et al.*, 2016; Casidy *et al.*, 2020). Recent work calls for greater clarity on how these dimensions shape outcomes (Heinonen and Adeola, 2024). The rapid rise of digital technologies and human–machine interactions has amplified opportunities for efficiency and personalization, yet it risks distancing innovation from the human realities it is intended to serve. Hence, integrating human centricity remains essential (Heinonen, 2025).

Against this backdrop, this study examines how service innovation shapes trust, relationship anxiety and relational performance by drawing on concepts from Resource Dependency Theory (RDT) and Social Exchange Theory (SET). Accordingly, RDT highlights that firms depend on external partners for critical resources, which creates ongoing interdependence that conditions customer involvement, relationship learning and the exchange of ideas during innovation activities (Pfeffer and Salancik, 2006; Wang *et al.*, 2025a). Supplier dependence further shapes cooperation and coordination, influencing relational outcomes across supply networks (Malik *et al.*, 2018; Yin and Wang, 2025). Building on these insights, SET provides a behavioral explanation for how such interdependence unfolds, as exchanges rooted in reciprocity and perceived balance help explain variation in trust and performance across relationships (Cropanzano *et al.*, 2017; Mitchell *et al.*, 2012). In this study, service innovation is expected to signal positive initiating actions that enhance competence, contractual and goodwill trust, which in turn support relational performance, while relationship anxiety may weaken these effects (Kingshott, 2006; Mende and Bolton, 2011). Accordingly, we seek to answer the following research questions:

RQ1. How do different dimensions of trust (competence, contractual and goodwill) mediate the relationship between service innovation and relational performance in interorganizational settings?

RQ2. How does relationship anxiety moderate the mediating effects of trust dimensions on the link between service innovation and relational performance?

RQ3. What alternative configurations lead to high trust dimensions and relational performance?

In the quantitative phase, we collected data from managers of the top 500 companies in Türkiye and used PLS-SEM to analyze symmetric relationships between the variables. The study explores how trust dimensions mediate the relationship between service innovation and relational performance, as well as the dampening effect of relationship anxiety. In addition, we applied fuzzy set qualitative comparative analysis (fsQCA) to evaluate asymmetric causal configurations and discussed the findings through qualitative interviews, providing deeper insights into the dynamics between these factors.

Moreover, developing countries are of great importance in developing business models and integrating new technologies, as Kavadias *et al.* (2016) put forward that for new technologies to turn into an industry, they should be designed to meet the needs of developing countries. While service innovation research has predominantly focused on Western contexts (Paschou *et al.*, 2020), developing economies offer nuanced insights. In markets such as Türkiye, characterized by rapid technological adoption and evolving buyer–supplier dynamics (Alkire and Hammedi, 2021), trust mechanisms may operate differently due to institutional voids and heightened relational uncertainty. For example, relationship anxiety – a perceived risk of dependency or opportunism – may amplify in contexts where formal contracts are less enforceable, altering how trust dimensions mediate service innovation outcomes. Despite calls to contextualize service innovation frameworks (Heinonen and Adeola, 2024; Kowalkowski *et al.*, 2024), few studies empirically examine these relationships in emerging markets, limiting the generalizability of existing theories. Incorporating perspectives from developing countries into service innovation research can lead to more inclusive and impactful innovations, as well as a better understanding of the global service context (Paschou *et al.*, 2020; Singh *et al.*, 2020; Witell *et al.*, 2016).

This study makes significant theoretical contributions in several key areas. First, it responds to the calls by prior research (Kowalkowski *et al.*, 2024; Rabetino *et al.*, 2024; Samuelsson, 2023) by linking suppliers' service innovation to relational performance, offering a novel perspective and considering various outcome variables. Second, it builds on the works studying trust with different dimensions (Fatima *et al.*, 2018; Kayeser Fatima and Abdur Razzaque, 2014) by showing that different trust dimensions produce varying outcomes in the service innovation–relational performance relationship within a B2B context. This enhances our understanding of the complex interactions between trust and performance in supplier–customer relationships. In addition, the study addresses Huang *et al.*'s (2022) call by incorporating mediators in supplier–customer mechanisms. Finally, the introduction of relationship anxiety as a moderator provides fresh insights into its role in B2B interactions, contributing to a deeper understanding of its influence on relational outcomes.

Theoretical background

Resource-based approaches and social exchange theory

Service innovation research has traditionally been anchored in strategic management theories, such as the resource-based view and dynamic capabilities (e.g. Salunke *et al.*, 2019), to explain its drivers and outcomes. However, recent empirical developments, especially the past 10 years, emphasize the need for a behavioral

(Gustafsson *et al.*, 2020; Snyder *et al.*, 2016) and human perspective (Heinonen, 2025). Accordingly, Resource Dependence Theory (RDT) posits that organizations are not fully self-contained; they must engage external partners to secure necessary resources, creating ongoing interdependence across organizational boundaries (Pfeffer and Salancik, 2006; Wang *et al.*, 2025a). Within this context, effective customer involvement in service innovation can generate relationship learning, encourage mutual willingness to learn and support the exchange of ideas that leads to future gains for both parties (Yin and Wang, 2025). Supplier dependence, defined as the extent to which suppliers rely on major customers for financial resources, further shapes these interactions and influences the structure of buyer–supplier relationships (Xie *et al.*, 2021a; Yin and Wang, 2025). Prior research shows that this dependence affects cooperation, coordination and broader relational outcomes across supply networks, making it a central concern in understanding how organizations manage resource-based linkages (Malik *et al.*, 2018; Wang *et al.*, 2025a). Adding up on the RDT's insights, SET builds a valuable lens for understanding supplier-customer relationships. Rather than a singular theory, SET encompasses a family of models that conceptualize relationships as sequential exchanges between parties, shaped by reciprocity, trust and the balance of exchanges (Cropanzano and Mitchell, 2005; Mitchell *et al.*, 2012). This relational perspective underscores the role of social elements in sustaining long-term relationships (Cropanzano *et al.*, 2017).

SET suggests that reciprocal obligations play a key role in fostering trust, loyalty and commitment in relationships (Blau, 1964). According to SET, positive initiating actions enhance trust, which in turn drives positive behavioral responses (Cropanzano *et al.*, 2017). As a strategic marketing tool, SET underscores the role of relational contracts in service interactions, where rewards are not always guaranteed but are built on mutual benefits (Mitchell *et al.*, 2012). Accordingly, SET can explain how competence, contractual and goodwill trust, developed through reciprocity by service innovation, can lead to long-term supplier–customer relationships (Blau, 1964). Trust promotes cooperation, reduces fear and greed and fosters "a reservoir of goodwill" that sustains these relationships (Kingshott, 2006). However, relationship anxiety can diminish this effect on trust, thus moderating the dynamics of these exchanges (Mende and Bolton, 2011).

Conceptual model and hypothesis development

Service innovation

Service innovation research encompasses a broad range of approaches, including service design, customer-dominant logic, reconfiguration and integration, all aimed at enhancing value creation for both suppliers and customers (Casidy *et al.*, 2020; Salunke *et al.*, 2019). Yet the field remains fragmented, with disciplinary heterogeneity generating conceptual inconsistencies and limiting cumulative knowledge development (Gustafsson *et al.*, 2020). Building on (Salunke *et al.*, 2013) collaborative view, this study defines service innovation as the introduction of novel or significantly improved methods that enhance service offerings, encompassing expertise development, faster service delivery, customization and technological integration. This definition is in line with recent perspectives on service innovation that emphasize human-centric approaches that integrate technological capabilities with expert knowledge (Heinonen, 2025; Rosenbaum and Russell-Bennett, 2021). As such, they collectively shape customer experience by differentiating suppliers through expertise, increasing satisfaction via speed and addressing diverse needs through flexibility (Kowalkowski *et al.*, 2024). Strong quality evaluation processes further reinforce customer perceptions, while advanced technologies amplify service innovation, enabling suppliers to deliver more efficient and effective solutions (Hurmelinna-Laukkanen and Ritala, 2010). Ultimately, service innovation reflects a supplier's commitment to competitive advantage and value creation through continuous adaptation to evolving customer expectations (Helkkula *et al.*, 2018; Rubalcaba *et al.*, 2012). For B2B customers, service innovations enhance operational efficiencies, improve service quality and foster long-term success in dynamic markets (Gustafsson *et al.*, 2020).

Service innovation is inherently complex and multidimensional, encompassing customer involvement, technological advancements and organizational culture (Rabetino *et al.*, 2024). However, limited attention has been given to its relational and human-centered aspects, despite their critical role in where service technology and human expertise converge (Rosenbaum and Russell-Bennett, Heinonen, 2025), which leads to value co-creation and innovation success (Casidy *et al.*, 2020; Edvardsson *et al.*, 2010). Against this backdrop, this study examines how service innovation fosters long-term supplier–customer relationships through its interactive and supportive dimensions outlined by recent studies (Barrios *et al.*, 2023; Kowalkowski *et al.*, 2024; Salunke *et al.*, 2019). The interactive dimension involves external innovations that directly enhance customer value, while the supportive dimension focuses on internal improvements that indirectly contribute to value creation (Gustafsson *et al.*, 2020). Accordingly, we posit that service innovation strengthens trust and facilitates sustained collaboration, reinforcing relational stability by integrating these dimensions (Kamalaldin *et al.*, 2020; Woo *et al.*, 2021; Xie *et al.*, 2021b). The following sections will outline the specific relationships between these variables and their implications for relational performance.

Relational performance

Relational performance reflects the strength of buyer–supplier relationships, encompassing future purchase intentions, long-term commitment and reduced switching behavior (Chen *et al.*, 2013). Accordingly, the literature presents mixed evidence on whether the impact of service innovation on relational performance is immediate or mediated by other relational constructs. While some studies suggest a direct path to customer behaviors (e.g. Ordanini *et al.*, 2014) others suggest an indirect path through mediation mechanisms by signaling supplier competence and reliability, encouraging continued engagement (Barrios *et al.*, 2023; Haleem *et al.*, 2018). Given its collaborative nature (Casidy *et al.*, 2020), this engagement creates a reinforcing cycle where trust-driven collaboration enhances innovation efforts, further solidifying long-term relationships (Kowalkowski *et al.*, 2024; Rabetino *et al.*, 2024). Accordingly, service innovation can lower resource uncertainty and reinforce interdependence in line with RDT (Pfeffer and Salancik, 2006) while simultaneously enhancing reciprocal benefits in exchange as described by SET (Mitchell *et al.*, 2012). Moreover, service

innovation has been shown to foster customer engagement (Kim *et al.*, 2021) and drive purchasing behavior (Casidy *et al.*, 2020). Innovative services also contribute to customer satisfaction and loyalty (Feng *et al.*, 2020; Hollebeek *et al.*, 2018). Research further suggests that service innovation elicits favorable customer behaviors, such as increased loyalty (Truong *et al.*, 2020), repurchase intentions (Wang *et al.*, 2018) and positive word-of-mouth (Ordanini *et al.*, 2014). In B2B service settings, supplier innovativeness is closely tied to both organizational and relational performance (Samuelsson, 2023). On top of that, some research holds that this link requires a mediation mechanism which signals providers' reliability and dependability, so reinforcing their partnerships (Kowalkowski *et al.*, 2024; Rabetino *et al.*, 2024). Based on the literature explained above, we hypothesize:

H1. Suppliers' service innovation is positively related to relational performance.

Different types of trust

Service innovation depends on interaction between parties, making trust a necessary condition for its effectiveness (Steinbruch *et al.*, 2021). Trust is particularly important in service contexts, as strong relationships enhance performance outcomes (Maestrini *et al.*, 2021). Conceptually, trust reflects a cognitive state where individuals accept vulnerability toward another party's behavior (Biswas *et al.*, 2022). Although considered subtle and multifaceted (Wang *et al.*, 2025b), trust is often assessed through competence, contractual and goodwill dimensions, each shaping how customers evaluate and sustain relationships with suppliers. Competence trust assures buyers of a supplier's technical reliability and ability to deliver quality services (Fatima *et al.*, 2018; Newell *et al.*, 2019; Raza-Ullah, 2021). Contractual trust fosters confidence in the supplier's sincerity and transparency, reducing perceived risks (Steinbruch *et al.*, 2021). Goodwill trust reflects a deeper relational bond, where suppliers prioritize buyers' interests and provide support beyond contractual obligations (Kayeser Fatima and Abdur Razzaque, 2014; Maestrini *et al.*, 2021).

First, we posit that service innovation can shape trust by enhancing the perceived benefits of buyer–supplier exchanges, consistent with arguments in RDT and SET. Accordingly, service innovation signals technical capability that reduces dependency risk and strengthens competence trust (Cropanzano and Mitchell, 2005; Raza-Ullah, 2021). It also aligns with predictable resource flows that support contractual trust while demonstrating reliability and fairness that reinforce contractual norms (Poppo and Cheng, 2022; Yin and Wang, 2025). Service innovation further indicates commitment that mitigates power imbalance and supports goodwill trust, while extra-role effort provides social rewards that promote benevolence and reciprocity (Eckerd *et al.*, 2021; Kaufmann *et al.*, 2018). Moreover, prior research suggests that effective communication of innovative capabilities enhances competence trust, leading to greater collaboration and information sharing (Fawcett *et al.*, 2017). Joint innovation efforts also strengthen goodwill trust by fostering mutual commitment and shared value creation (Wang *et al.*, 2025b). As a result, service innovation enhances trust, as customers develop psychological affinity and endorsement when they recognize the value of innovative offerings (Biswas *et al.*, 2022; Newell *et al.*, 2019). Therefore, we hypothesize:

H2a. Suppliers' service innovation is positively related to the customer's competence trust.

H2b. Suppliers' service innovation is positively related to the customer's contractual trust.

H2c. Suppliers' service innovation is positively related to the customer's goodwill trust.

Moreover, we argue that trust dimensions also affect relational performance based on SET, adding to the insights of RDT. Competence trust can stabilize resource exchanges and support coordinated action while also reducing perceived risk and increasing the rewards of exchange in line with SET (Mitchell *et al.*, 2012; Pfeffer and Salancik, 2006). Formalized trust can limit opportunism and help maintain predictable resource flows, and predictability and fairness can sustain mutually beneficial relationships (Wang *et al.*, 2025a). Goodwill trust can encourage collaboration and resource sharing under uncertainty, and benevolence can strengthen reciprocity norms that promote cooperative behaviors and improved performance (Kayeser Fatima and Abdur Razzaque, 2014). Prior research suggests that the dimensions of trust influence long-term relationships, yet findings remain mixed. While some studies highlight goodwill trust as the primary driver (Kayeser Fatima and Abdur Razzaque, 2014), others point to competence trust as more decisive (Maresch *et al.*, 2020). Still, certain contributions place contractual trust at the forefront, suggesting that its role may be contingent on contextual or relational factors (Malhotra and Lumineau, 2011). Competence trust, as outlined by Sako (1992), develops from rational assessments of past performance, reinforcing future commitments between business partners. By reducing perceived risks, it enhances interdependence, which is essential for fostering innovation and agile responses to market changes (Raza-Ullah, 2021; Ruan *et al.*, 2020). Contractual trust, grounded in mutual expectations and clear agreements, also plays a pivotal role by ensuring partners act in good faith, minimizing opportunism and promoting collaboration (Bednarik and Marshall, 2024; Pulles *et al.*, 2014). Finally, goodwill trust strengthens relationships by nurturing emotional bonds through consistent positive interactions, increasing mutual cooperation, loyalty and resilience, especially in uncertain conditions (Mora-Monge *et al.*, 2019; Wang *et al.*, 2025b). Based on this, we posit:

H3a. Customers' competence trust is positively related to relational performance.

H3b. Customers' contractual trust is positively related to relational performance.

H3c. Customers' goodwill trust is positively related to relational performance.

Mediating role of trust dimensions

In addition to its direct effect, trust plays a crucial mediating role between service innovation and relational performance. As outlined RDT, trust acts as a relational mechanism converting innovation into performance by stabilizing resource dependence (Pfeffer and Salancik, 2006). Adding to this, SET puts forwards that relationships are shaped by the perceived benefits and costs of interactions, with trust acting as a pivotal mediator (Rahman *et al.*, 2022). In supplier–buyer relationships, trust mediates the shift from transactional to relational exchange by reducing perceptions of opportunism and encouraging long-term commitment (Fawcett *et al.*, 2017; Mora-Monge *et al.*, 2019). Buyers are more willing to share sensitive information when trust is present, while suppliers invest in customization and innovation with expectations of reciprocity rather than exploitation (Svare *et al.*, 2020). Absent trust, cooperation is undermined despite economic incentives, as uncertainty dominates decisions. The mediating role of trust dimensions, however, varies by context. In B2B relationships, such as auditing, competence trust mediates the effect of supplier capabilities on buyer commitment, as expertise lowers performance uncertainty (Maresch *et al.*, 2020). Contractual trust mediates stability in industries with strong regulatory requirements by signaling predictability through formal agreements (Malhotra and Lumineau, 2011). In collaborative innovation projects, goodwill trust facilitates knowledge sharing by emphasizing openness and benevolence (Svare *et al.*, 2020). In business to consumer exchanges, competence trust shapes perceptions of service quality, while goodwill trust mediates emotional engagement and loyalty due to the experiential nature of consumption (Rubalcaba *et al.*, 2012). Contractual trust is less influential in such settings, where brand reputation and relational norms carry greater weight (Fatima *et al.*, 2018).

Based on these insights, we propose the following hypotheses:

H4a. Customers' competence trust mediates the positive relationship between service innovation and relational performance.

H4b. Customers' contractual trust mediates the positive relationship between service innovation and relational performance.

H4c. Customers' goodwill trust mediates the positive relationship between service innovation and relational performance.

Moderating role of relationship anxiety

Relationship anxiety, defined as a buyer's concern about the stability and reciprocity of their relationship with a supplier, has been shown to influence service innovation outcomes, but its effects may be more nuanced than previously assumed (Vlachos *et al.*, 2010). Anxiety can heighten perceived dependence risks and limit the stabilizing effects of innovation on trust as noted in RDT (Malik *et al.*, 2018). It can also increase perceived costs in exchange, reducing willingness to reciprocate and weakening trust formation in line with SET (Cropanzano *et al.*, 2017). While high anxiety can erode trust, hinder communication and create barriers to collaboration, these outcomes may not be uniform across contexts. In B2B relationships, for instance, moderate levels of anxiety may actually prompt buyers to seek stronger safeguards and clearer governance, potentially stimulating structured innovation efforts rather than stifling them (Basu *et al.*, 2023; Malhotra and Lumineau, 2011). Conversely, in less formalized settings, such anxiety often leads to defensive behaviors that undermine cooperation. Low anxiety generally supports trust, communication and joint problem-solving, which are critical for co-creating innovative solutions (Kim *et al.*, 2018; Kivlighan *et al.*, 2017). As Mende and Bolton (2011) suggested, customers with lower relational anxiety are more likely to exhibit higher levels of satisfaction, trust and commitment. However, this assumption may overlook the possibility that some degree of vigilance may be functional in complex, high-stakes exchanges (Chen and Lewis, 2024):

H5a. Relationship anxiety weakens the positive relationship between service innovation and competence trust.

H5b. Relationship anxiety weakens the positive relationship between service innovation and contractual trust.

H5c. Relationship anxiety weakens the positive relationship between service innovation and goodwill trust.

Causal configurations for relational performance

In our research on trust and relational performance, we build on traditional symmetric relationship models by incorporating asymmetric case-based approaches, drawing on complexity theory (Prentice, 2020; Ragin, 2009). The insufficiency principle (T1) highlights that individual antecedent conditions are often inadequate in predicting outcomes, emphasizing the limitations of unifactorial analysis. According to the recipe principle (T2), achieving high predictive accuracy requires combining multiple conditions, akin to crafting a recipe rather than relying on isolated factors. Furthermore, the equifinality principle (T3) demonstrates that different algorithms can lead to similar outcomes, while the causal asymmetry principle (T4) suggests that pathways to trust and relational performance formation and deterioration are not simple opposites. These principles, coupled with the interdependence (T5) and anomalies (T6) principles, frame our approach to understanding trust and relational performance dynamics in a more nuanced, contextually contingent manner. Thus, we propose a set of propositions to guide this asymmetric analysis:

- P1a: All (or nearly all) cases with higher service innovation AND lower relationship anxiety have higher competence trust.
- P1b: All (or nearly all) cases with higher service innovation AND lower relationship anxiety have higher contractual trust.
- P1c: All (or nearly all) cases with higher service innovation AND lower relationship anxiety have higher goodwill trust
- P2a: All (or nearly all) cases with higher competence trust AND contractual trust AND goodwill trust have higher relationship performance.
- P3a: All (or nearly all) cases with higher service innovation AND competence trust AND contractual trust AND

goodwill trust AND lower relationship anxiety have higher relationship performance.

- Accordingly, Figure 1 presents the structural model of PLS-SEM and the causal configurations.

Research method

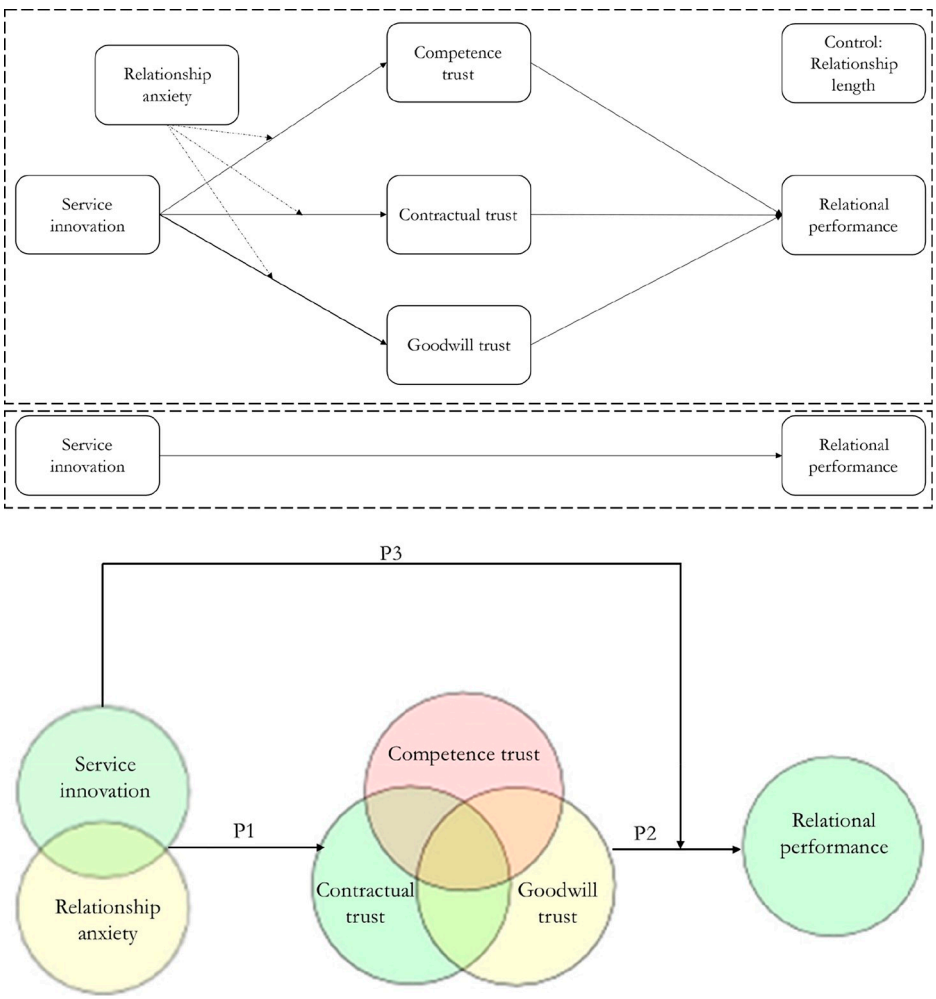
Study design

This study follows an explanatory sequential (QUAN > qual) mixed-methods design, where quantitative analysis is prioritized to address the research objectives, and qualitative insights are used to explain the observed patterns (Creswell and Clark, 2017). Unlike a QUAL > quan approach suited for exploratory work, our study builds on an established theoretical framework, modeling trust dimensions and B2B relationships from prior literature. The qualitative strand therefore serves to clarify the underlying mechanisms behind the quantitative results, rather than to generate new hypotheses or uncover previously unknown relationships (McCrudden and McTigue, 2019).

The quantitative phase was designed to empirically examine our research questions through complementary methods. First, PLS-SEM was used to test the mediating effects of competence, contractual and goodwill trust in the relationship between service innovation and relational performance, allowing for the simultaneous estimation of multiple mediators and their statistical significance (RQ 1). Second, the model incorporated an interaction term to assess whether relationship anxiety moderates the direct effects of trust dimensions on relational performance (RQ 2). Third, to capture alternative causal pathways, FsQCA was applied to identify different combinations of service innovation and relationship anxiety to lead to higher trust dimension and the combinations of relationship anxiety, trust dimensions and service innovation sufficient for achieving high relational performance (RQ 3). This configurational approach extends beyond net effects and provides practitioners with actionable "recipes" for success. This approach aligns with previous research in the field of services marketing (e.g. Nadeem *et al.*, 2025), who highlight the value of sequential mixed-methods in integrating theoretical frameworks for validation.

The subsequent Phase 2 involved semistructured interviews, which were analyzed thematically, to supplement and refine the quantitative findings. Aligning with Ashok *et al.* (2018), we

Figure 1 Structural model of PLS-SEM and causal configurations for fsQCA



Source: Authors' own work

anticipated that a purely quantitative approach would be insufficient to understand industrial supplier–buyer relationships which are formed over time. As such, a cross-sectional quantitative assessment cannot fully account for how service innovation influences relational performance through trust dimensions when relationship anxiety is present. The semistructured interviews provided a rich, narrative context for the statistical findings. For instance, while PLS-SEM reveal that one dimension of trust, such as competence trust, is a stronger mediator than another, the interviews allowed us to explore the specific behaviors, events and historical context that led to the development of this specific trust dimension. Given these complexities, we adopted a design featuring a dominant quantitative phase for initial model testing, supplemented by a focused qualitative element to clarify potential confounding results. Furthermore, methodological integration was achieved at the levels of interpretation and reporting through narrative synthesis and joint display of results (McCrudden and McTigue, 2019). We aimed at ensuring a strong triangulation of findings, enhancing theoretical and practical insights. In essence, our chosen QUAN > qual design allows us to first validate our conceptual model on a large scale and then use the qualitative phase to explain the nuances and contextual details of those findings (see Figure 2).

Study context

This study focuses on industrial buyers of companies engaged in service innovation in an emerging economy context (Türkiye). Accordingly, the United Nations Conference on Trade and Development Technology and Innovation Report (2021) notes that emerging markets contribute 44% of global Research and Development growth, highlighting their dual role as customers and innovators (Kavadias *et al.*, 2016). Türkiye, leveraging its strategic nexus between Europe, Asia and the Middle East, has emerged as a hub for service innovation. Its tech-savvy, youthful population (median age 32) and 88.8% internet penetration (Turkish Statistical Institute, 2024) drive sectors such as fintech, e-commerce and logistics, as illustrated by startups like Trendyol and Getir. The study uses data from the İstanbul Chamber of Industry (İSO) Top 500 companies, which underpin Türkiye's industrial and technological advancement by contributing over 30% of exports, and a considerable portion of R&D investments (more than 30bn TRY) in Türkiye (Istanbul Chamber of Industry, 2024).

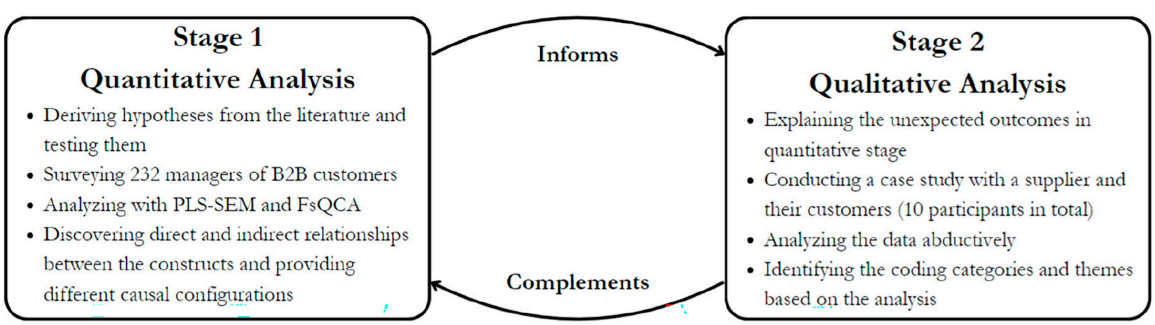
Quantitative stage

Data collection and sample

In the present study, the data were collected through online five-point Likert surveys distributed to the decision-makers working in İSO 500 companies via LinkedIn. The data were collected using a purposive sampling approach, a nonprobability technique widely acknowledged in quantitative research (Stockemer, 2019). This method, also referred to as judgmental sampling, relies on the researcher's discretion in selecting elements that meet specific criteria, thereby ensuring that only individuals relevant to the study's objectives are included (Hair *et al.*, 2019). Purposive sampling was particularly suitable in this study, as the aim was to gather insights from decision-makers such as managers and executives, who represent the most appropriate informants for the constructs under examination. To identify respondents, professional job titles listed on LinkedIn profiles were used as selection criteria. LinkedIn, being a widely used business-oriented social media platform, was considered an effective setting for reaching B2B professionals. Although social media-based data collection methods have been critiqued for potential selection biases (Wang *et al.*, 2020b), LinkedIn has distinct advantages in B2B research. Compared to mail panels or rented lists, LinkedIn provides greater representativeness, given its extensive use by business professionals (Peesker *et al.*, 2022). Moreover, responses collected through such platforms may be less affected by social desirability bias, as participants respond in private contexts (Paulhus, 1998). This data collection approach has been used effectively in a variety of studies from diverse fields (e.g., Kumar and Shankar, 2024). The accuracy of respondents' contact details is also improved, since salespeople actively manage their own profiles (Kerr and Marcos-Cuevas, 2022). To further enhance reliability and response rates, the data collection process incorporated personalized invitations and assurances of confidentiality, as well as the offer of summary results to participants (Cook *et al.*, 2000).

Initially, there were 248 replies in the sample. However, due to missing info and poor responses, 16 replies were discarded, while 232 were kept. To assess the adequacy of the sample, multiple sample size calculations were applied. A*n a priori* calculation using Soper's (2025) tool indicated a minimum of 123 participants, while a power analysis with G*Power (Erdfelder *et al.*, 2009)suggested 92 participants, based on a medium effect

Figure 2 Study design



Source: Authors' own work

size, $\alpha = 0.05$ and power = 0.80 – parameters widely used in social sciences (Sarstedt *et al.*, 2022). Furthermore, the inverse square root method recommended at least 155 participants (Westland, 2010). Considering these thresholds, the achieved sample of 232 was judged sufficient for the analyses. The age groups of the present study are mostly concentrated on the 30–50 ($n = 170$), the most common age group for the executives involved in supplier–customer relationships. In terms of the department, the present study's sample has a balanced distribution among upper management, maintenance/technical/energy, purchasing and production/operation departments, even if production/operation department has a slightly higher number of respondents. For the level of education, the sample includes mostly people who graduated from undergraduate or postgraduate level institutions (see online appendices, Table A1).

The present study used well-established scales in the literature (see online appendices, Table A2). Participants were asked to think about the closest supplier they work with for the service innovation scale. Then they were asked to evaluate each item on a five-point Likert scale varying from 1 (remain unchanged) to 5 (have changed completely). Following a sequence of factor analyses, it was determined that certain items exhibited low factor loadings, resulting in the removal of one item from relationship anxiety (RA1).

Analytical methods

This study used a multimethod approach, integrating PLS-SEM and FsQCA to leverage the strengths of both techniques in testing hypotheses and exploring propositions. PLS-SEM is widely applied for estimating models with numerous constructs, indicators and structural paths, without requiring distributional assumptions (Hair *et al.*, 2019). By contrast, fsQCA applies set-theoretic logic to identify necessary and sufficient conditions, allowing the analysis of equifinality and causal asymmetry (Rasoolimanesh *et al.*, 2021). This approach enables researchers to incorporate principles of complexity theory into marketing and service research (Prentice, 2020). As prior studies indicate, fsQCA is often used alongside SEM to address the limitations of linear causal reasoning and to reveal alternative causal configurations (Rasoolimanesh *et al.*, 2021). Integrating both methods enhances explanatory and predictive insights, as demonstrated in contexts such as e-commerce, where regression-based methods may oversimplify multifaceted relationships (Pappas and Woodside, 2021). In this study, PLS-SEM was first used to evaluate the measurement and structural models and the resulting composite scores were subsequently used in fsQCA to identify causal configurations, thereby offering a richer understanding of the exogenous conditions shaping the endogenous outcome.

Results

Reliability and validity

First reliability and validity test were implemented. Reliability refers to the situation that items constituting a measure reflect the same construct with high intercorrelation. According to the results, the values of composite reliability are higher than the suggested threshold value. For the validity, the average variance extracted values are higher than the suggested 0.5 threshold, which means that there is no concern about convergent validity. The results of the heterotrait–monotrait (HTMT) analysis (Henseler *et al.*, 2015) indicate that all HTMT values are below the conservative threshold of 0.85, suggesting discriminant validity among the constructs. The highest HTMT value is observed between competence trust and relational performance (0.790), while the lowest is between service innovation and relationship anxiety (0.122), confirming that the constructs are empirically distinct. The full collinearity assessment shows that all variance inflation factor (VIF) values fall well below the common threshold of 3.0, indicating no significant multicollinearity concerns (Hair *et al.*, 2019). The highest VIF value is associated with contractual trust predicting relational performance (1.723), while the lowest is for relationship anxiety predicting competence trust, contractual trust and goodwill trust (1.003). Table 1 shows the values in detail.

Common method bias and endogeneity bias

To assess the potential risk of common method variance, we implemented multiple preventive and diagnostic measures (MacKenzie and Podsakoff, 2012). First, we assured participants of their privacy and emphasized that there were no right or wrong answers to encourage honest responses. In addition, we separated the scales for independent and dependent variables across different pages of the questionnaire to minimize response editing. Beyond confirming response anonymity, we used ex post statistical tests to further mitigate bias. Given recent concerns about the limitations of the Harman one-factor test (Baumgartner *et al.*, 2021), we applied (Kock, 2015) random variable test alongside a full collinearity assessment. By regressing all variables onto a randomly generated variable using Excel's RAND() function, we verified that all VIF values remained below the acceptable threshold of 3 (ranging from 1.071 to 1.808), indicating that common method variance is not a concern. Finally, to address potential endogeneity bias, we included relationship length as a control variable in our analysis.

PLS-SEM structural model results

After completing reliability and validity analyses, path analysis was done to test causal relationships in the structural model.

The direct effect analysis reveals that service innovation (SI) does not have a significant direct effect on relational performance (RP) ($\beta = 0.023$, $p = 0.656$), as indicated by the confidence interval spanning zero (−0.078 to 0.126), leading to the rejection of *H1*. However, SI significantly influences competence trust (COMP) ($\beta = 0.277$, $p = 0.002$), contractual trust (CONT) ($\beta = 0.203$, $p = 0.016$) and goodwill trust (GOOD) ($\beta = 0.237$, $p = 0.002$), supporting *H2a*, *H2b* and *H2c*, respectively.

In addition, all three dimensions of trust significantly impact relational performance. Competence trust ($\beta = 0.439$, $p < 0.001$), contractual trust ($\beta = 0.142$, $p = 0.043$) and goodwill trust ($\beta = 0.174$, $p = 0.013$) exhibit positive and significant effects on RP, with their respective confidence intervals not crossing zero, confirming *H3a*, *H3b* and *H3c*. These results suggest that while service innovation does not directly enhance relational performance, it fosters different forms of trust, which, in turn, improve relational performance.

Next, mediation and moderation test were implemented. The mediation analysis results indicate that competence trust

Table 1 HTMT and VIF analysis results

Construct	(I)	(II)	(III)	(IV)	(V)	(VI)
(I) Service innovation						
(II) Competence trust	0.199					
(III) Contractual trust	0.183	0.683				
(IV) Goodwill trust	0.189	0.603	0.694			
(V) Relational performance	0.190	0.790	0.658	0.639		
(VI) Relationship anxiety	0.122	0.427	0.336	0.441	0.663	

Path	VIF
COMP -> RP	1.607
CONT -> RP	1.723
GOOD -> RP	1.521
RA -> COMP	1.003
RA -> CONT	1.003
RA -> GOOD	1.003
SI -> COMP	1.059
SI -> CONT	1.059
SI -> GOOD	1.059
SI -> RP	1.051

Note(s): SI = service innovation; COMP = competence trust; CONT = contractual trust; GOOD = goodwill trust; RP = relational performance; RA = relationship anxiety
Source(s): Authors' own work

(COMP) significantly mediates the relationship between service innovation (SI) and relational performance (RP) ($\beta = 0.122$, $p = 0.007$), supporting *H4a*. However, the indirect effects of SI on RP through contractual trust (CONT) ($\beta = 0.029$, $p = 0.122$) and goodwill trust (GOOD) ($\beta = 0.041$, $p = 0.058$) are not statistically significant. Consequently, *H4b* and *H4c* are not supported. These findings highlight that while SI does not directly impact RP, it contributes to relational performance by strengthening competence trust, whereas contractual and goodwill trust do not serve as significant mediators in this relationship.

Our moderation analysis starts with direct effect of RA on trust dimensions. Accordingly, RA had a significant negative effect on COMP ($\beta = -0.35$, $p < 0.001$), CONT ($\beta = -0.28$, $p < 0.001$) and GOOD ($\beta = -0.35$, $p < 0.001$). Contradicting this, RA significantly moderates the effects of service innovation (SI) on competence trust (COMP) ($\beta = 0.203$, $p = 0.007$), contractual trust (CONT) ($\beta = 0.240$, $p = 0.001$) and goodwill trust (GOOD) ($\beta = 0.173$, $p = 0.009$). Then, we analyze the effect of interaction terms. Rejecting our hypotheses *H5a*, *H5b* and *H5c* which state negative moderation, these findings suggest that SI on different forms of trust is contingent on the level of RA. The moderated mediation analysis further reveals that RA moderates the indirect effect of SI on relational performance (RP) through COMP ($\beta = 0.089$, $p = 0.020$), supporting *H6a*. However, the moderated mediation effects through CONT ($\beta = 0.034$, $p = 0.080$) and GOOD ($\beta = 0.030$, $p = 0.086$) are not significant, leading to the rejection of *H6b* and *H6c*. The mediation model (SI → COMP → RP) demonstrates that relationship anxiety (RA) moderates the indirect effect of service innovation (SI) on relational performance (RP) through competence trust (COMP). At higher levels of RA (+1 SD), the mediation effect is stronger ($\beta = 0.208$, $p = 0.004$), indicating that higher anxiety amplifies the relationship. In contrast, at lower RA levels (−1 SD), the indirect effect weakens significantly ($\beta = 0.032$, $p = 0.421$), suggesting that lower anxiety diminishes the mediation. At the mean level of RA, the effect is moderate ($\beta = 0.120$, $p = 0.008$), supporting a typical mediation pattern. Thus, RA moderates the strength of the mediation relationship. These results suggest that RA strengthens the positive indirect effect of SI on RP via COMP, while no such effect is observed for CONT and GOOD (see Online Appendices Figure A1 for slope analysis). Table 2 demonstrates the structural model analysis in detail.

Robustness checks (PLSPredict and CVPAT results)

The explanatory power analysis, as indicated by the *R*-square values, shows that the model explains 42.1% of the variance in relational performance (RP), suggesting a moderate to strong predictive capability. Among the trust constructs, competence trust (COMP) exhibits the highest explained variance at 22.2%, followed by goodwill trust (GOOD) at 18.9% and contractual trust (CONT) at 16.8%. The model's ability to explain nearly half of the variance in RP underscores the significance of trust as a mediating mechanism in the relationship between service innovation and relational outcomes.

The PLSPredict results indicate that the model demonstrates acceptable predictive relevance for relational performance (RP). The Q^2_predict values are all positive (ranging from 0.042–0.206), suggesting that the model has predictive validity (Shmueli *et al.*, 2019). RP2 exhibits the highest predictive relevance (Q^2_predict = 0.206), while RP3 shows the lowest (Q^2_predict = 0.042).

A comparison of PLS-SEM root mean square error (root mean squared error (RMSE)) and linear model (LM) RMSE reveals that for RP1 and RP3, the PLS-SEM model achieves lower RMSE values (0.490 vs 0.484 for RP1 and 0.836 vs 0.858 for RP3), indicating superior predictive performance relative to the

Table 2 Structural model results

Hypothesis	Path	β	t	p	LLCI	ULCI	Support
H1	SI → RP	0.026	0.499	0.618	−0.092	0.120	No
H2a	SI → COMP	0.277	3.116	0.002	−0.009	0.395	Yes
H2b	SI → CONT	0.203	2.421	0.015	−0.002	0.338	Yes
H2c	SI → GOOD	0.237	3.138	0.002	0.027	0.350	Yes
H3a	COMP → RP	0.433	5.877	0.000	0.281	0.570	Yes
H3b	CONT → RP	0.140	1.997	0.046	0.001	0.273	Yes
H3c	GOOD → RP	0.171	2.439	0.015	0.034	0.308	Yes
Hypothesis	Path	β	t	p	LLCI	ULCI	Mediation
H4a	SI → COMP → RP	0.120	2.666	0.008	0.024	0.199	Yes
H4b	SI → CONT → RP	0.028	1.534	0.125	0.001	0.077	No
H4c	SI → GOOD → RP	0.041	1.869	0.062	0.006	0.092	No
Hypothesis	Path	β	t	p	LLCI	ULCI	Moderation
H5a	RA x SI → COMP	0.203	2.678	0.007	0.046	0.332	Yes
H5b	RA x SI → CONT	0.240	3.455	0.001	0.111	0.367	Yes
H5c	RA x SI → GOOD	0.173	2.629	0.009	0.056	0.312	Yes
Hypothesis	Path	β	t	p	LLCI	ULCI	Moderated mediation
H6a	RA x SI → COMP → RP	0.088	2.324	0.020	0.020	0.168	Yes
H6b	RA x SI → CONT → RP	0.033	1.736	0.083	0.004	0.083	No
H6c	RA x SI → GOOD → RP	0.030	1.696	0.090	0.006	0.081	No
Control	Relationship length	0.042	0.837	0.403	−0.062	0.136	

Note(s): SI = service innovation; COMP = competence trust; CONT = contractual trust; GOOD = goodwill trust; RP = relational performance; RA = relationship anxiety
Source(s): Authors' own work

linear model (LM). However, for RP2, the PLS-SEM RMSE (0.541) is slightly higher than the LM RMSE (0.545), suggesting comparable predictive accuracy (Shmueli *et al.*, 2019).

The CVPAT results indicate that the PLS-SEM model outperforms the indicator average (IA) approach in terms of predictive accuracy (Sharma *et al.*, 2023). For relational performance (RP), the average loss difference between PLS-SEM and IA is −0.051, with a significant t-value of 4.111 ($p = 0.000$). Similarly, the overall model comparison shows a significant difference of −0.052 ($t = 2.782$, $p = 0.006$), confirming that PLS-SEM provides superior predictive performance compared to IA.

When comparing PLS-SEM to the linear model (LM), the results are mixed. For RP, the loss difference is −0.012, but the t-value (0.903) and p-value (0.367) indicate no significant difference, suggesting that PLS-SEM and LM perform similarly in predicting RP. However, at the overall model level, PLS-SEM shows significantly lower prediction loss than LM (−0.039, t = 3.070, $p = 0.002$), reinforcing the model's robustness in predictive accuracy (Sharma *et al.*, 2023). Table 3 provides the robustness checks in detail.

FsQCA analysis and results

Calibration of data

After assessing the PLS-SEM model, we calibrated the data and used latent variable scores instead of sum scores as inputs for fsQCA. In PLS-SEM, latent constructs are modeled as composites, meaning they are emergent variables formed by weighted linear combinations of their observed indicators (Hair *et al.*, 2019). The algorithm begins with equal outer weights, iteratively refines them based on correlations between indicators and construct proxies and continues until convergence. The resulting composite scores act as proxies for latent variables and are then used to estimate structural paths, reflecting the method's emphasis on prediction rather than global model fit (Sarstedt *et al.*, 2016). This treatment differs from covariance-based SEM, which assumes common factors underlie observed measures. A key advantage of PLS-SEM is its ability to account for measurement error through individual indicator weighting, which enhances the reliability and validity of model estimates (Yuan *et al.*, 2020). By contrast, sum scores – commonly used when preparing measures for fsQCA – fail to capture measurement error and treat all indicators as equally important, leading to potential parameter biases and reduced statistical power (Sarstedt *et al.*, 2016). Furthermore, while sum scores conceal the relative importance of indicators, PLS-SEM provides this diagnostic insight, strengthening its interpretive and analytical value (Hair *et al.*, 2019).

This approach enhances precision in capturing unobservable constructs, addressing measurement error that sum scores overlook (Sarstedt *et al.*, 2016). Therefore, we opted for this approach rather than using sum scores. For fsQCA, standardized construct scores from PLS-SEM were calibrated to a [0–1] range, using −3 as zero (no membership), 0 as 0.5 (crossover point) and 3 as full membership. A truth table was created to identify condition combinations producing the outcome, with rows having case frequencies below 3.00 removed for sample sizes exceeding 150, as recommended by Fiss (2011).

Necessary conditions analysis

The necessary conditions analysis identifies whether certain conditions must be present for an outcome, with a consistency

Table 3 Explanatory and predictive power analysis results

Construct					R-square
Explanatory power					
COMP					0.222
CONT					0.168
GOOD					0.189
RP					0.421
	Q^2predict		PLS-SEM_RMSE		LM_RMSE
PLS_Predict					
RP1	0.164		0.490		0.484
RP2	0.206		0.541		0.545
RP3	0.042		0.836		0.858
	PLS loss	**IA loss**	**Average loss difference**	***t*-value**	***p*-value**
CVPAT PLS-SEM vs indicator average (IA)					
RP	0.410	0.462	−0.051	4.111	0.000
Overall	0.490	0.542	−0.052	2.782	0.006
PLS-SEM vs linear model (LM)					
RP	0.410	0.423	−0.012	0.903	0.367
Overall	0.490	0.529	−0.039	3.070	0.002

Note(s): COMP = competence trust; CONT = contractual trust; GOOD = goodwill trust; RP = relational performance
Source(s): Authors' own work

threshold of 0.9 indicating necessity (Ragin, 2009). Results showed that none of the individual conditions met the requirement for necessity, though specific combinations of conditions proved essential for achieving trust dimensions and relational performance. For relational performance, the highest consistency values are observed for compcal+contcal+goodcal+sical (0.976) and compcal+contcal+goodcal+racal (0.969), indicating that these combinations are almost always present when relational performance is high. The high consistency values for compcal (0.877), contcal (0.842) and goodcal (0.832) suggest that these trust dimensions are necessary but not individually sufficient for high relational performance. Coverage values indicate that while these conditions are frequently associated with relational performance, they do not explain all instances, reinforcing the need for interaction effects. For competence trust, the combination sical+~racal (0.952) shows the highest consistency, suggesting that higher service innovation and the absence of relationship anxiety strongly predict competence trust. The high consistency for sical (0.813) also highlights its importance.

For contractual trust, the highest necessary condition is sical+~racal (0.942), followed by sical+racal (0.880), suggesting that service innovation (sical) is a key factor in establishing contractual trust. For goodwill trust, the condition sical+~racal (0.946) emerges as the most consistent predictor, reinforcing the role of service innovation in fostering goodwill-based trust. The relatively lower consistency for individual conditions such as sical (0.806) and racal (0.736) suggests that goodwill trust depends on multiple interacting factors rather than a single necessary condition. Overall, these results indicate that trust and relational performance are contingent on complex configurations rather than single necessary conditions. Service innovation (sical) consistently plays a crucial role in all trust dimensions, while relational performance relies on a combination of competence, contractual and goodwill trust mechanisms (see Online Appendices, Table A3).

Truth table and McCloskey algorithm results

In the subsequent step, consistency and coverage were calculated for all configurations, identifying those with a coverage greater than 0.2 and consistency above 0.8 as sufficient (Pappas and Woodside, 2021). Following established recommendations (Rasoolimanesh *et al.*, 2021), the intermediate set solution was selected for this study, ensuring robust and interpretable results. The truth table and McCloskey algorithm results reveal key causal configurations influencing different types of trust and relational performance.

For competence trust (P1a), two causal recipes (~racal and sical) exhibit strong coverage (0.842 and 0.813, respectively) and high consistency (0.839 and 0.806, respectively). The solution coverage (0.952) suggests that these conditions collectively explain most of the variance in competence trust, with a consistency score of 0.772, indicating robust configurational validity. Similarly, contractual trust (P1b) and goodwill trust (P1c) are explained by the same two conditions (~racal and sical), with solution coverage values of 0.942 and 0.946, respectively, and consistencies above 0.75, reinforcing the reliability of these causal pathways.

For relational performance (P2), two causal configurations – compcal*~goodcal (coverage = 0.667, consistency = 0.895) and compcal*contcal (coverage = 0.787, consistency = 0.918) – account for most of the variance, achieving an overall solution coverage of 0.852 and high consistency (0.892). The most complex set of causal conditions is observed in P3 (relational performance with multiple interactions), where four

configurations contribute to the outcome. The highest coverage is observed for compcal*contcal*~racal (0.716, consistency = 0.944), while other configurations also exhibit high consistency (ranging from 0.899 to 0.939). The solution coverage (0.888) suggests a comprehensive explanation of relational performance, with a slightly lower overall consistency (0.851) compared to P2. These findings indicate that trust mechanisms and relational performance are shaped by multiple interacting conditions, with competence trust emerging as a particularly strong driver in most configurations (see Table 4).

Qualitative stage. Our quantitative findings reveal three unexpected insights. First, while service innovation positively influences all trust dimensions, it enhances relational performance only through competence trust. Second, relationship anxiety moderates the link between service innovation and trust types, suggesting that anxiety can amplify trust formation under certain conditions. Third, FsQCA results indicate that the absence of relationship anxiety is a key factor in most causal pathways leading to trust and relational performance. These findings highlight the need for a qualitative stage to further explore these dynamics, reinforcing the study's mixed-method design.

Sampling, data collection and analysis

To expand on the quantitative findings, we used a case study approach to explore contextual mechanisms behind unexpected results and add depth to the analysis. We conducted semistructured interviews with five managers from an industrial supplier (Alpha) and five of its customers (see Online Appendices, Table A4). The firm was selected as a revelatory case (Yin, 2017) due to its advanced service innovation practices. At the time of data collection, Alpha generated more than 50% of its revenue from services, and its offerings were regarded positively by customers. These interviews aimed to generate detailed, contextually rich insights into participants' thoughts, feelings and perspectives (Creswell *et al.*, 2016). Three interviews were conducted face-to-face, while others were held online, with participants' consent to take recordings and written notes (Davies *et al.*, 2020). The interviews were framed using the same set of codes from the empirical study, with semistructured questions designed accordingly (see Online Appendices, Table A5). In the qualitative phase, sensitizing concepts drawn from the quantitative results were used as guiding tools rather than fixed templates, enabling the inquiry to remain flexible (Creswell and Clark, 2017). A funneling strategy structured the interviews, beginning with broad accounts before narrowing to focused themes. To enrich the data, nonleading probes encouraged participants to elaborate, while member checking was applied to confirm the accuracy of interpretations (Korstjens and Moser, 2018). Theoretical saturation was reached when additional interviews no longer yielded new themes or insights related to the mediating role of trust dimensions, the moderating effect of relationship anxiety or the mechanisms linking service innovation to relational performance. After the eighth interview, recurring patterns emerged across supplier and customer perspectives, and subsequent interviews confirmed rather than expanded these themes, indicating conceptual redundancy (Guest *et al.*, 2020). The sample size of ten participants is appropriate for an explanatory sequential design and a revelatory case study, as the goal was depth rather than breadth (Yin, 2017). Prior research suggests that 6–12 interviews are typically sufficient to achieve saturation in focused, theory-driven inquiries within B2B contexts (Hennink *et al.*, 2017). Furthermore, the inclusion of both supplier and customer viewpoints enhanced data richness and triangulation, ensuring that the qualitative phase effectively complemented the quantitative findings and provided robust contextual explanations.

Table 4 Causal configurations for different types of trust and relational performance

Proposition (outcome variable)	Causal recipe	Raw coverage	Unique coverage	Consistency
P1a Competence trust	~racal	0.842151	0.138901	0.8392
	sical	0.813256	0.110006	0.806204
	solution coverage: 0.952157		solution consistency: 0.771984	
P1b Contractual trust	~racal	0.814668	0.136637	0.810492
	sical	0.804878	0.126847	0.7966
	solution coverage: 0.941515		solution consistency: 0.762114	
P1c Goodwill trust	~racal	0.824607	0.139967	0.811432
	sical	0.805852	0.121212	0.788865
	solution coverage: 0.945819		solution consistency: 0.757248	
P2 Relational performance	compcal*~goodcal	0.667212	0.0648022	0.89506
	compcal*contcal	0.787263	0.184854	0.917553
	solution coverage: 0.852066		solution consistency: 0.891581	
P3	compcal*~contcal*~goodcal	0.619277	0.0141137	0.898826
Relational performance	compcal*contcal*~racal	0.716007	0.0694492	0.94406
	compcal*~racal*sical	0.661274	0.0158349	0.936845
	compcal*contcal*goodcal*sical	0.621601	0.0203959	0.939394
	solution coverage: 0.888124		solution consistency: 0.851275	

Note(s): Sical = service innovation; compcal = competence trust; contcal = contractual trust; goodcal = goodwill trust; rpcal = relational performance; racal = relationship anxiety
Source(s): Authors' own work

Following Dubois and Gadde's (2002) framework, we integrated the qualitative findings with the quantitative core to enhance interpretation, using literature to contextualize results within the discussion. As this requires going back and forth between literature and data, the abductive (aka *in vivo*) approach guided our analysis, allowing for an iterative interplay between theoretical pre-understanding and empirical data collection (Andersen and Kragh, 2010; Dubois and Gadde, 2002). Unlike purely inductive or deductive methods, this approach incorporates existing theory as a foundation for framing the research question and refining theoretical insights. By structuring our analysis in this manner, we ensured that the qualitative component not only supplemented but also deepened the explanatory power of the quantitative findings. We focused on participants' own words, examining their values, attitudes and beliefs related to the phenomenon through thematic analysis. To ensure consistency and reliability, all transcripts were independently coded by the authors and compared for uniformity (Korstjens and Moser, 2018). The data analysis followed a structured yet iterative process using NVivo. Familiarization involved repeated readings of transcripts to note patterns linked to service innovation, trust, relational performance and relationship anxiety. Initial coding assigned descriptive labels to meaningful excerpts, which were then grouped into broader patterns. Abductive reasoning guided the comparison of emergent themes with social exchange theory, prompting refinement where necessary. The process concluded with the integration of refined insights, ensuring alignment between qualitative findings and the quantitative results.

Findings

The qualitative analysis of in-depth interviews identified two key themes: competence-dominant relationship impact and anxiety-driven trust enhancement. The first theme highlights that customers perceive proficient suppliers as more reliable, reinforcing long-term supplier–customer relationships. In response, suppliers prioritize technical superiority in their innovative services to sustain trust and commitment. The second theme indicates that long-term technical adherence mitigates relationship anxiety, as buyers prioritize suppliers demonstrating consistent technical capabilities. In addition, large-scale investments necessitate due diligence in supplier evaluations, reinforcing trust through careful risk assessment and adherence to technical standards (see Figure 3 for detailed data structure).

The findings indicate that competence trust plays a dominant role in industrial supplier-buyer relationships, surpassing other trust dimensions. Competence trust enables companies to "translate innovative services into enduring business relationships by ensuring reliability and performance consistency" (Supplier, General Manager). Participants emphasized that suppliers' technical superiority is a critical factor in this process, as customers prioritize "technical excellence when evaluating innovative service offerings" (Supplier, Sales Manager). This suggests that trust in suppliers is largely built on their ability to deliver technically advanced solutions, reinforcing long-term collaboration and reducing perceived risks in adopting new services. As one participant stated:

> Before Alpha came, we were insufficient in terms of equipment maintenance and we were getting low performance. We met with their equipment maintenance and auxiliary services. We no longer keep our minds in the factory and we are constantly informed technically. They come regularly, do the maintenance, and tell us the malfunctions from there. This both pleases us and ensures that we do not switch to another company (Customer 3, Factory Manager).

Suppliers recognize the critical role of technical superiority in fostering long-term relationships and prioritize delivering high-performance, reliable solutions. As one participant from the supplier company noted, "assuming full responsibility for customer equipment ensures swift problem resolution, reinforcing trust in their capabilities" (Supplier, Maintenance Manager). This trust is rooted in customers' confidence that technical issues will not disrupt production, as emphasized by a sales engineer: "We take all responsibility for the equipment in our customers. If they encounter any problem, we solve it with our technical superiority" (Supplier, Sales Engineer 1). Consequently, this perceived reliability strengthens supplier-customer relationships, as confirmed by a customer who highlighted "the direct link between technical trust and ongoing collaboration" (Customer 4, Maintenance manager).

Customers and suppliers also stated that this kind of dependence might create a sense of relationship anxiety because if the supplier leaves the business, customers will be in trouble. When asked whether dependence driven by relationship anxiety influences their relationships, participants' responses aligned with our quantitative findings. Rather than undermining long-term relationships, this dependence appears to foster trust, provided that "suppliers consistently deliver innovative services" (Customer 2, Factory manager). Customers perceive suppliers' technical capabilities as a means of mitigating uncertainty, reinforcing confidence in the continuity and reliability of the partnership. This suggests that relationship anxiety, when managed through service innovation, does not weaken but may instead strengthen supplier-buyer relationships by enhancing trust in suppliers' problem-solving abilities and long-term commitment. As stated one by participant: "if the customer feels anxiety from the dependence to us, our provision of problem-free services and technical assistance overrides their anxiety" (Supplier, Maintenance Manager)

At this moment, the customers also said anxiety coming from technical dependence does not affect their relationships because of higher investments and long-term planning:

> It doesn't affect our relations with Alpha. Why not? Because. I mean, even without Alpha, there are 15 or 20 equipment companies selling boilers in Türkiye or hundreds of suppliers in the world. Alpha is one of them. We preferred it, we are very pleased. But there is no situation like we need their functioning, let's have an eye only on Alpha equipment. After all, we also made a ten-year maintenance contract. After all, this is a commercial agreement. Win win. (Customer 1, Maintenance Chief).

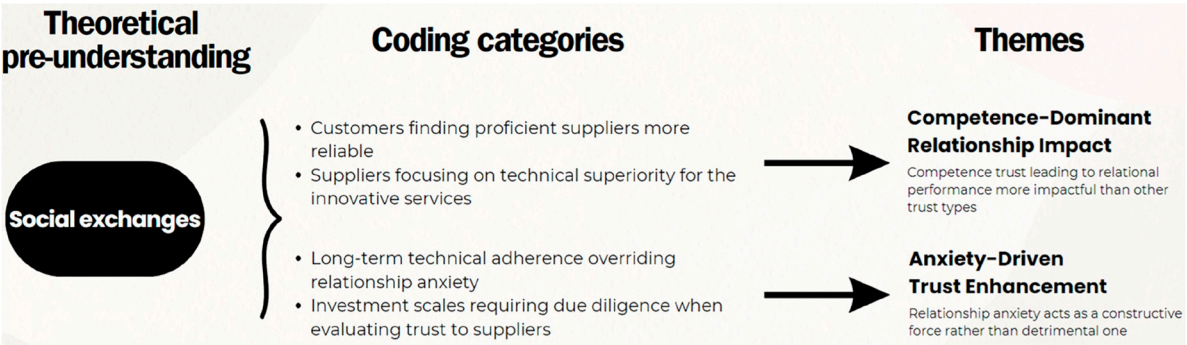
The integration of these themes is consistent with our FsQCA findings, further supporting the role of service innovation in addressing relationship anxiety. As emphasized in the first theme, customers prioritize uninterrupted production and seek to minimize uncertainties associated with supplier dependence. However, rather than being a source of instability, this dependence can be mitigated through suppliers' innovative service offerings, which enhance reliability and reinforce trust.

Discussion

Theoretical implications

Employing a mixed-methods approach grounded in RDT and SET, this study examines the relationship between service

Figure 3 Coding structure for qualitative analysis



Source: Authors' own work

innovation and relational performance, with different trust dimensions as a mediator and relationship anxiety as a moderator. In addition, we explore distinct causal configurations for different types of trust and relational outcomes. The findings are further enriched through a qualitative stage. The PLS-SEM findings confirm that service innovation significantly influences competence trust (*H2a*), contractual trust (*H2b*) and goodwill trust (*H2c*), aligning with prior research on service innovation and relational dynamics (Biswas *et al.*, 2022; Casidy *et al.*, 2020; Wu *et al.*, 2022). We found that service innovation has a slightly bigger effect on competence trust than other trust dimensions. Service innovation often requires collaboration with external partners, fostering trust through shared knowledge and informal agreements rather than rigid contracts (Corral de Zubielqui *et al.*, 2019). Such collaboration reduces perceived risks of opportunism and strengthens relational bonds (Poppo and Cheng, 2022). In B2B relationships, trust is primarily cultivated through the consistent delivery of high-quality service and adherence to commitments (Newell *et al.*, 2019). In addition, innovations driven by co-creation and coproduction embed trust into relational exchanges, reshaping supplier–client interactions (Kowalkowski *et al.*, 2024). Complementing this, buyers in qualitative stage repeatedly anchor trust in technical superiority, uptime assurance and problem-free service. This statement explains why service innovation has strongest effect on competence trust.

Another aspect of our findings relates to the distinct effects of trust dimensions on relational performance, supporting the hypotheses that competence trust (*H3a*), contractual trust (*H3b*) and goodwill trust (*H3c*) all significantly impact relational outcomes. Competence trust, rooted in shared expertise, is essential for fostering innovation and problem-solving in B2B contexts, thereby promoting collaboration and continuous improvement (Raza-Ullah, 2021). However, our research conflicts with Zhang and Li (2019) who suggested that ability trust for B2B salesperson does not affect customer loyalty. This suggests the importance of context for competence trust. Contractual trust, while providing a formal framework for accountability, may not fully mitigate opportunism without the support of goodwill trust (Wang *et al.*, 2025b). Goodwill trust is particularly crucial in environments with technological turbulence, as it helps firms manage high dependence disadvantages and mitigate opportunism (Zhang and Li, 2019). Moreover, our results align with Kayeser Fatima and Abdur Razzaque (2014) on competence and goodwill trust but challenge their conclusion that goodwill trust has a stronger impact. In contrast, we found competence trust to have a stronger effect on relational performance, which may be attributed to the differing contexts – bank marketing in their study versus B2B supplier–customer relationships in ours. As such, Maresch *et al.* (2020) argued that competent B2B negotiation partners are less likely to be confronted with objection. However, contrary to the initial hypothesis, service innovation was not found to have a direct effect on relational performance, suggesting that trust mediates this relationship and leading to the rejection of *H1*. This aligns with Casidy *et al.* (2020), who identified mediation mechanisms in the link between service innovation and adoption intention, but contrasts with Ordanini *et al.* (2014), who claims service innovation is a predictor of long-term relationships. Recent meta-analyses (Kowalkowski *et al.*, 2024; Rabetino *et al.*, 2024) also highlight mediation mechanisms between service innovation and process outcomes. The present study extends these insights by further examining the role of trust in this mediation process.

Interestingly, mediation analyses provide valuable insights that challenge prior findings for the role of trust dimensions in B2B relationships. The results revealed that competence trust (*H4a*) significantly mediated the relationship between service innovation and relational performance, while contractual trust (*H4b*) and goodwill trust (*H4c*) did not. These findings expand on prior research (e.g., Maestrini *et al.*, 2021; Steinbruch *et al.*, 2021) and extend the work of Kayeser Fatima and Abdur Razzaque (2014). According to SET, sustained relationships depend on exchanges that provide valuable resources and limit uncertainty (Edvardsson *et al.*, 2010; Mitchell *et al.*, 2012), with operational continuity being central in B2B contexts. Competence trust addresses this by assuring buyers that suppliers possess the technical expertise to secure performance (Maresch *et al.*, 2020), with service innovations such as predictive maintenance and remote monitoring functioning as capability-enhancing mechanisms that lower risk and transaction costs (Paschou *et al.*, 2020; Wu *et al.*, 2022). While contractual trust contributes to governance, its limits in dynamic settings stem from the impossibility of covering all

contingencies through formal agreements (Malhotra and Lumineau, 2011). Goodwill trust reflects benevolence and supports relational norms, but in highly technical, performance-sensitive exchanges, buyers tend to prioritize demonstrable ability over intent, as operational failure poses immediate and significant consequences (Maresch *et al.*, 2020). The qualitative stage clarifies that customers interpret service innovation through its capacity to guarantee operational continuity (preventive maintenance, quick recovery and assumed responsibility). This interpretation converts innovation into competence trust, which then drives relational performance – explaining the full mediation by competence trust and the dominant effect of competence relative to other trust dimensions. Taken together with qualitative stage, these insights reposition competence trust as the pivotal carrier of value from service innovation to relational performance in industrial settings. Contractual and goodwill trust still matter, but they are supportive relative to competence, which aligns with the field's emphasis on risk absorption, technical stewardship and operational continuity.

Our integration of relationship anxiety into a B2B context contributes to a deeper understanding of the complex dynamics between trust, relational performance and anxiety. Surprisingly, the study found that relationship anxiety positively moderates the relationship between trust dimensions and relational performance (rejecting *H5a*, *H5b* and *H5c* which state a negative effect), contrary to the negative moderating role suggested by prior research (Kivlighan *et al.*, 2017; Vlachos *et al.*, 2010). Even more, relationship anxiety positively moderates the mediation between service innovation, competence trust and relational performance, but does not impact the mediations for contractual or goodwill trust (rejecting *H6a*, *H6b* and *H6c*). Contrary to expectations of a negative dampening (Kim *et al.*, 2018), we find that anxiety positively moderates trust → performance links and strengthens the SI → CT → RP mediation. Interviews explain why: dependence risk heightens the returns to verified competence; when suppliers deliver "problem-free services and technical assistance," anxiety is transmuted into stronger reliance. In high-investment, lock-in–prone exchanges, credible technical delivery amplifies the performance payoff of trust (Chen and Lewis, 2024). This insight indicates that dependence anxiety can heighten the value of verified competence, turning anxiety into a performance amplifier when suppliers deliver consistently. Taking together, our findings uncover that relationship anxiety can function constructively, rather than detracting from trust formation. Customers' concerns about supplier reliability may lead to more rigorous evaluation processes, thereby strengthening trust. Over time, consistent technical adherence helps alleviate relationship anxiety and further reinforces trust.

The necessary condition analysis (NCA) conducted after PLS-SEM reveals that relational performance and various trust dimensions are contingent on complex interactions of factors rather than on any single condition. The highest consistency values for relational performance are found with combinations such as compcal+contcal+goodcal+sical and compcal+contcal+goodcal+racal, indicating that these combinations are crucial for strong relational outcomes. While competence trust, contractual trust and goodwill trust high consistency (over 0.80) for relational performance, they are not individually sufficient to be a necessary condition. In addition, service innovation (sical) consistently plays a pivotal role across all trust types, particularly enhancing competence, contractual and goodwill trust through combinations like sical+~racal, highlighting its critical role in shaping trust. The truth table analysis provides a configurational understanding of the conditions influencing trust and relational performance, demonstrating multiple pathways leading to the same outcome, supporting the concept of equifinality in trust-performance dynamics. For competence trust (P1a), the conditions ~racal and sical exhibit strong raw coverage, with the solution coverage (0.952) and consistency confirming their significant role in fostering competence trust. Similarly, for contractual trust (P1b) and goodwill trust (P1c), ~racal and sical emerge as dominant solutions, with consistency values above 0.75, reinforcing the importance of service innovation in trust development. For relational performance (P2), two main causal configurations, compcal*~goodcal and compcal*contcal, emphasize the pivotal role of competence trust, either independently or with contractual trust. The analysis of more complex interactions in P3 highlights that competence and contractual trust are especially impactful in the absence of relationship anxiety, with service innovation further supporting trust-driven performance outcomes.

Field accounts from our qualitative stage corroborate this equifinality: strong relational performance can arise from high competence alongside contractual assurance under low anxiety, or high competence reinforced by innovative service routines even when anxiety is present. These patterns align with configurations such as compcal*contcal (with ~racal) and compcal+contcal+goodcal+racal, and with the frequent presence of sical across trust-building recipes. Supporting FsQCA findings on the role of relationship anxiety, several buyers downplay anxiety due to market alternatives and long-term contracts, aligning with our configurational results that show multiple viable recipes to strong performance – e.g. competence trust with contractual assurance under low anxiety (compcalcontcal, compcal~goodcal) and competence trust reinforced by innovative service routines even when anxiety is present (…+racal). NCA further supports that no single condition is necessary; rather, combinations of service innovation, trust dimensions and anxiety states underpin high performance (equifinality).

The present study makes significant theoretical contributions to the literature in several ways. First, it responds to the calls made by Samuelsson (2023) and Rabetino *et al.* (2024) by linking suppliers' service innovation to relational performance, thereby enhancing our understanding of this relationship through a novel perspective and considering various outcome variables. Second, the study supports the findings of Kayeser Fatima and Abdur Razzaque (2014) by demonstrating that different trust dimensions yield different outcomes in the service innovation–relational performance relationship within a B2B context. This expands our understanding of the complex interactions between trust and performance in supplier–customer relationships. Furthermore, the study addresses the need outlined by Huang *et al.* (2022) by incorporating various mediators in these relationships, providing new insights into the underlying mechanisms. Finally, the introduction of relationship

anxiety as a moderator offers a fresh perspective on its influence in B2B interactions, which is explored through both multimethod and mixed-methods analyses, contributing to a deeper understanding of its role in shaping relational outcomes.

Managerial implications

This study offers practical implications for service managers, marketers and stakeholders in B2B contexts. Our results indicate that service innovation yields value when framed as a signal of technical mastery and reliability rather than novelty alone, primarily through its effect on competence trust. Managers should prioritize innovations that safeguard operational continuity, including predictive maintenance, remote monitoring and rapid-response protocols. For instance, Siemens' Industrial IoT platform (MindSphere) exemplifies how predictive analytics minimizes downtime, reinforces competence trust and translates technological advancement into sustained contractual relationships. Because competence trust has the most significant impact on relational performance, managers should reallocate training budget to technical skill development to ensure strong technical proficiency among their teams, which will improve customer relationships.

Moreover, relationship anxiety, while commonly perceived as a risk, can enhance performance when suppliers consistently provide seamless service delivery. Managers should address such concerns by offering uptime guarantees, communicating contingency measures and assuming full responsibility for critical assets. Importantly, early-stage anxiety often drives customers to scrutinize suppliers more closely, making robust quality control and demonstrable expertise essential. Rolls-Royce's "Power by the Hour" exemplifies this logic, converting dependence into loyalty through performance guarantees and real-time monitoring that shift operational risk to the supplier.

Although competence trust is central, contractual and goodwill trust function as essential complements. Long-term service agreements should balance formal accountability with adaptability, as shown by GE Healthcare's 10-year managed equipment services contracts, which integrate binding commitments with continuous upgrades to secure both legal assurance and relational stability.

Our configurational analysis highlights equifinality, showing that strong relational performance can arise through distinct trust combinations. Managers should align strategies with client profiles – emphasizing competence and contractual clarity when anxiety is low, while coupling competence with visible innovation routines and risk-sharing mechanisms under high-anxiety conditions. Finally, stakeholders in industrial ecosystems can support a strong service sector by encouraging service innovation through funding for research and development and tax incentives for innovative businesses. In addition, investing in education and training programs will equip the workforce with essential technical skills. Policies promoting transparency and accountability in service processes will further mitigate relationship anxiety, enhancing customer trust and overall service quality.

Limitations and future research directions

While this study contributes to the service, innovation and supply chain literature, it is not without limitations. First, the use of purposive sampling may introduce selection bias because respondents met predefined criteria rather than being randomly selected, which limits generalizability to wider service supply chains operating under different conditions. More representative evidence could be obtained by integrating probability-based techniques such as stratified or cluster sampling. Although the study includes multiple sectors, its evidence mainly reflects industrial settings. Future work should examine the model in non-industrial environments to evaluate its validity across varied service contexts and to determine whether its assumptions hold under alternative structural and operational conditions. Moreover, as the study relies on cross-sectional data, it does not capture the temporal evolution of trust and relational dynamics, which develop through ongoing exchanges between customers and suppliers. Although fsQCA identifies configurations, it does not establish temporal causality; thus, longitudinal studies could provide deeper insights into how customer-supplier relationships evolve over time. Second, the study is not sector-specific, and future research could replicate the model within particular industries to examine contextual variations. Third, cultural factors, which play a crucial role in relationship development, were not included in the model. Given that prior research has explored culture as both an antecedent and outcome in relationship models, future studies could integrate cultural dimensions, such as Hofstede's framework or constructs like Guanxi (Huang *et al.*, 2022). Finally, while this study highlights the impacts of service innovation, it does not examine its antecedents due to survey length constraints. Future research should develop a more comprehensive model incorporating both the drivers and relational outcomes of service innovation.

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Data availability

The data that has been used is confidential.

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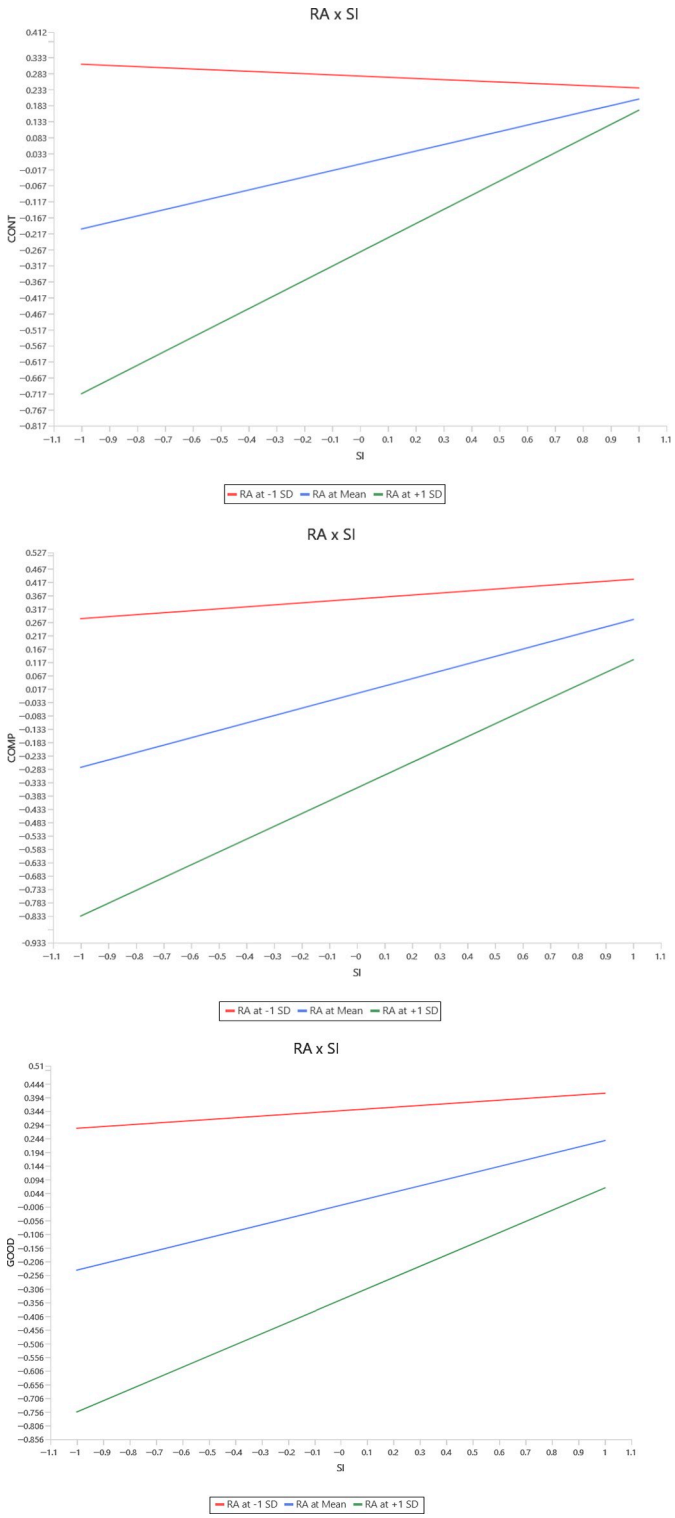
Appendix

Figure A1 Plot analysis for relational anxiety as a moderator between service innovation and different types of trust



Source: Authors' own work

Table A1 Demographic information of the participants ($n = 232$)

Department		Level of education		Age	
Upper management	39	Postgraduate	76	Over 50	12
Maintenance/technic/energy	44	Undergraduate	142	30–50	170
Purchasing	54	Others	14	25–30	50
Production/operation	68				
Others	27				
Industry					
Textile					31
Energy					21
Food					39
Chemicals					21
Machinery					37
Health and medical product					15
Automotive					17
Woodworks and packaging					20
Software and telecommunications					10
Others					21

Table A2 Measures

Construct	Item	Factor loading	Rho_a	Rho_c	AVE
Service Innovation	The areas of expertise that supplier offers	0.766	0.905	0.903	0.541
	The speed in which supplier delivers its products/services	0.761			
	The flexibility of supplier products or services (e.g. customization)	0.794			
	The ways in which the services supplier provide are delivered	0.646			
	The ways in which the products/services supplier provide are produced	0.721			
	"The processes by which the supplier procures resources to offer products/services (e.g. introducing new recruitment standards)	0.591			
	The ways by which supplier evaluates the quality of the products/services offered	0.799			
	The nature of technology that is used to produce or deliver products/services	0.780			
Competence trust	I can trust supplier's competency	0.926	0.831	0.922	0.855
	Supplier is technically dependable	0.923			
Contractual trust	There is no need to be cautious against the supplier	0.674	0.856	0.870	0.695
	The supplier is sincere	0.904			
	The supplier keeps their promises	0.902			
Goodwill trust	The supplier is like a friend to us	0.787	0.761	0.860	0.671
	The supplier offers assistance even in changing circumstances	0.841			
	The supplier looks at customers' interests in the relationship	0.829			
Relational performance	We are willing to consider this supplier when making a purchase decision in the future	0.753	0.753	0.831	0.630
	We want to maintain a long-term relationship with this supplier	0.878			
	We do not have a plan to switch to another supplier in the short term (e.g. one year)	0.571			
Relationship anxiety	The supplier changes how they treat me for no apparent reason	0.810	0.769	0.859	0.670
	I worry that the supplier does not really like me as a customer	0.797			
	I worry that the supplier does not care about me as much as I care about the supplier	0.849			

Note(s): Service innovation was measured by an eight-item measure taken from Casidy *et al* (2020) who adapted items from Salunke *et al* (2013). The dimensions of trust included eight items (two items for competence trust, three items for contractual trust and three items for goodwill trust) based on the studies of Ganesan (1994) and Kumar *et al.* (1995). Relational performance was adopted from Chen *et al.* (2013) with two items, while the relational anxiety scale was taken from Mende and Bolton (2011) with three items. The participants assessed statements in the measures using a five-point Likert scale from one (strongly disagree) to five (strongly agree)
Source(s): Authors' own work

Table A3 Necessary conditions test results

Outcome variable	Conditions tested:	Consistency	Coverage
Relational performance	compcal	0.877281	0.874047
	∼compcal	0.759209	0.764670
	contcal	0.842255	0.840518
	∼contcal	0.739415	0.743510
	goodcal	0.831842	0.839281
	∼goodcal	0.735112	0.731149
	racal	0.738640	0.746608
	∼racal	0.858262	0.852102
	sical	0.804905	0.794985
	∼sical	0.744234	0.756275
	compcal+contcal	0.932272	0.812252
	compcal+contcal+goodcal	0.959122	0.787521
	∼compcal+∼contcal	0.825044	0.724641
	∼compcal+∼contcal+∼goodcal	0.853873	0.694769
	contcal+goodcal	0.916953	0.807380
	∼contcal+∼goodcal	0.801291	0.703461
	compcal+contcal+goodcal+sical	0.975731	0.752106
	∼compcal+∼contcal+∼goodcal+∼sical	0.906455	0.679066
	compcal+contcal+goodcal+racal	0.969449	0.716786
	∼compcal+∼contcal+∼goodcal+∼racal	0.964544	0.700369
Competence trust	sical	0.813256	0.806204
	∼sical	0.746721	0.761609
	racal	0.755467	0.766441
	∼racal	0.842151	0.839200
	sical+racal	0.897711	0.729769
	sical+∼racal	0.952157	0.771984
	∼sical+racal	0.866587	0.715995
	∼racal+∼sical	0.921461	0.752274
Contractual trust	Sical	0.804878	0.796600
	∼sical	0.747251	0.760909
	Racal	0.739951	0.749478
	∼racal	0.814668	0.810492
	sical+racal	0.879594	0.713877
	sical+∼racal	0.941515	0.762114
	∼sical+racal	0.855548	0.705724
	∼sical+∼racal	0.897200	0.731275
Goodwill trust	Sical	0.805852	0.788865
	∼sical	0.735261	0.740534
	Racal	0.735782	0.737126
	∼racal	0.824607	0.880437
	sical+racal	0.811432	0.706768
	sical+∼racal	0.945819	0.757248
	∼sical+racal	0.848137	0.691980
	∼sical+∼racal	0.899713	0.725326

Source(s): Authors' own work

Table A4 Participants in the qualitative phase

Interview no.	Participant role	Company	Duration (min)
1	General manager	Supplier	40
2	Maintenance manager	Supplier	30
3	Sales engineer 1	Supplier	35
4	Sales engineer 2	Supplier	25
5	Sales manager	Supplier	40
6	Maintenance chief	Customer 1	30
7	Factory manager	Customer 2	30
8	Factory manager	Customer 3	25
9	Maintenance manager	Customer 4	35
10	Maintenance manager	Customer 5	40

Source(s): Authors' own work

Sample interview protocol

1 General understanding of service innovation:
   - How do you define service innovation in the context of your business relationships? Can you share an example of a recent service innovation introduced by your suppliers?

2 Service innovation and trust:
   - In what ways do service innovations influence your level of trust in a supplier?
   - How do you evaluate a supplier's competence when they introduce a new service innovation? What specific factors matter most to you?

3 Competence trust as a moderator:
   - Our research suggests that competence trust plays a key role in strengthening the relationship between service innovation and relational performance. Do you agree? Why or why not?
   - When faced with an innovative service, do you prioritize competence trust over other forms of trust (e.g. goodwill trust, contractual trust)? What drives this preference?

4 Relationship anxiety and trust:
   - Have you ever experienced concerns or anxiety when adopting a supplier's service innovation? What were the main sources of this anxiety?
   - Our findings suggest that despite relationship anxiety, service innovation can still enhance trust. Have you experienced a situation where innovation helped build trust despite initial concerns?

5 Trust and long-term B2B relationships:
   - How do long-term relationships with suppliers influence your perception of their service innovations? Do you become more accepting of innovation over time?
   - Beyond competence, what other supplier characteristics (e.g. communication, transparency and past performance) influence your trust in their service innovations?

6 fsQCA findings: trust formation and relational performance:
   - Our analysis suggests that service innovation, combined with low relationship anxiety, is essential for strong trust and relational performance. Do you think reducing relationship anxiety should be a priority for suppliers? If so, how can they achieve this?

Source(s): Authors' own work

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