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B2B Customer Loyalty in the Digital Transformation Era: Technology Experience and Financial Transparency

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Abstract−This systematic literature review (SLR) investigates the determinants of business-to-business (B2B) customer loyalty during the digital transformation era (2020-2025), focusing specifically on technology experience and financial transparency, two domains where empirical evidence remains fragmented. Following PRISMA 2020 guidelines, a comprehensive search across SciSpace, Google Scholar, and ArXiv yielded 749 initial records; after duplicate removal and systematic screening, 30 high-relevance empirical studies formed the primary evidence base. Technology experience enhances B2B loyalty through three mechanisms: AI-driven personalization, IoT-enabled real-time integration, and digital channel engagement. Financial transparency operates primarily through trust-building mechanisms, though direct empirical validation of pricing and cost transparency effects on B2B loyalty remains limited; blockchain shows conceptual promise but lacks rigorous empirical validation. The integration of technology experience and financial transparency creates synergistic loyalty effects exceeding individual contributions, moderated by industry sector, regional context, environmental turbulence, firm size, and relationship maturity. Trust emerges as the central mediator linking both dimensions to loyalty. The study advances B2B relationship marketing theory by integrating technology and transparency into a unified loyalty framework grounded in social exchange theory, service-dominant logic, transaction cost economics, and relational contract theory. Practically, B2B organizations should prioritize high-quality AI personalization systems, IoT-enabled service tracking, digital co-creation channels, and transparent financial practices while contextualizing strategies to moderating factors.

Keywords: B2B Customer Loyalty; Digital Transformation; Technology Experience; Financial Transparency; Blockchain; AI Personalization

1. INTRODUCTION

The digital transformation era has fundamentally reshaped the landscape of business-to-business (B2B) relationships and customer loyalty. Traditional determinants of B2B loyalty - product quality, price competitiveness, and personal relationships - have been supplemented and, in some cases, supplanted by technology-driven experiences and transparent financial practices. Relationship marketing literature has long established that trust, commitment, and satisfaction constitute the proximate drivers of B2B loyalty (Morgan & Hunt, 1994); however, the mechanisms through which digital technologies and transparent practices build these relational assets remain poorly understood in the post-pandemic business environment. The proliferation of artificial intelligence (AI), Internet of Things (IoT), blockchain, and digital platforms enables unprecedented levels of personalization, operational efficiency, and customer engagement (Gligor et al., 2021). Simultaneously, transparent financial practices have become essential for sustaining long-term relationships in increasingly complex and globalized B2B markets.

This relational grounding can be situated within several complementary theoretical lenses that jointly explain how technology and transparency translate into loyalty. Social exchange theory holds that reciprocal value exchange builds commitment, implying that technology-enabled value creation and transparent practices foster reciprocity and long-term loyalty (Ahmad et al., 2023). Service-dominant logic emphasizes value co-creation through resource integration, illuminating how digital platforms enable suppliers and customers to jointly generate value while transparency facilitates the coordination this process requires (Berenguer-Contri et al., 2024). Transaction cost economics explains how reduced uncertainty encourages relational governance, clarifying how information quality and transparency lower search and monitoring costs and opportunism risk, thereby encouraging relationship-specific investment (Cuypers et al., 2021). Relational contract theory, in turn, proposes that trust substitutes for formal contracts, explaining how trust and commitment built through technology and transparency can govern B2B exchanges even in the absence of complete contractual safeguards (Macchiavello & Morjaria, 2023). Together, these grand theories converge on trust as the central mechanism connecting technology experience and financial transparency to loyalty outcomes, providing the theoretical scaffolding for the present review.

Digital transformation represents more than mere technology adoption; it encompasses fundamental changes in how organizations create, deliver, and capture value in B2B relationships (Sharma, 2021). In this context, technology experience - defined as customers' interactions with and perceptions of digital technologies throughout the buyer journey - has emerged as a critical loyalty driver (Shabankareh et al., 2025). Similarly, financial transparency - encompassing pricing clarity, cost disclosure, and verifiable transaction mechanisms - has gained prominence as buyers demand greater accountability and trust in supplier relationships. Yet, despite the practical urgency, academic literature treating these two dimensions jointly remains nascent.

A systematic review of recent empirical literature reveals three critical gaps. First, while individual technologies such as AI, IoT, and blockchain have been studied in isolation, their integrated effects on B2B loyalty remain poorly understood (Gligor et al., 2021). Second, the mechanisms through which financial transparency builds trust and

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commitment in digital environments lack empirical validation; most blockchain-related work remains conceptual (Anonymous, 2023a). Third, contextual moderators - industry sector, regional differences, environmental turbulence, firm size, and relationship maturity - have not been systematically documented in ways that can guide practitioner strategy (Belhadi et al., 2023; Kwiatek et al., 2020). The COVID-19 pandemic further accelerated digital adoption across B2B sectors, making the 2020-2025 period particularly critical for understanding how technology experience and financial transparency shape loyalty in digitally transformed environments.

Prior studies have examined B2B loyalty from relationship quality perspectives (Arthur et al., 2023; Sharma, 2021), digital channel quality perspectives (Mujianto et al., 2023; Berenguer-Contri et al., 2024), and loyalty program perspectives (Kwiatek et al., 2020); however, no systematic review has integrated technology experience and financial transparency as co-determinants of B2B loyalty in the 2020-2025 period. This represents the research gap and novelty of the present study. The study contributes by: (1) synthesizing empirical evidence on how technology experience dimensions influence B2B loyalty; (2) examining the role of financial transparency mechanisms in fostering B2B loyalty; (3) identifying integration and synergy effects between the two dimensions; and (4) analyzing moderating contextual factors. Theoretically, B2B loyalty research advances by integrating multiple theoretical lenses - social exchange theory, service-dominant logic, transaction cost economics, and relational contract theory - into a unified explanatory framework. Practically, it provides evidence-based guidance for B2B managers allocating digital transformation resources and designing customer loyalty strategies.

2. RESEARCH METHODS

2.1 Systematic Literature Review Design

This study employs a systematic literature review (SLR) methodology following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) 2020 guidelines (Page et al., 2021). The SLR protocol ensures transparency, rigor, and reproducibility in identifying, screening, and synthesizing empirical evidence on B2B customer loyalty determinants in the digital transformation era. The methodology is appropriate for this research objective as it enables comprehensive synthesis of heterogeneous empirical evidence across multiple disciplines, theoretical lenses, and geographic contexts, addressing the fragmentation in extant literature identified in the introduction.

2.2 Search Strategy and Data Sources

A comprehensive search strategy was executed across multiple academic databases to maximize coverage of relevant literature. The primary databases and their record contributions were: SciSpace Deep Search (n = 229 papers through advanced semantic search capabilities), SciSpace Standard Searches (n = 200 papers through keyword-based queries), SciSpace Full-Text Searches (n = 200 papers through full-text content analysis), SciSpace Library Searches (n = 23 papers from curated collections), Google Scholar (n = 57 papers through broad academic indexing), and ArXiv (n = 40 preprints and working papers). The total initial yield was 749 records.

The search strategy employed Boolean operators combining primary terms. The main search string combined: (“B2B customer loyalty” OR “business-to-business loyalty” OR “B2B retention”) AND (“digital transformation” OR “digitalization” OR “digital technologies”) AND (“technology experience” OR “AI” OR “artificial intelligence” OR “IoT” OR “Internet of Things” OR “blockchain” OR “digital channels”) AND (“financial transparency” OR “pricing transparency” OR “cost transparency” OR “trust” OR “transparency mechanisms”). A temporal filter restricted results to publications from January 2020 to March 2025. After removing duplicates and merging results across databases, 244 unique papers remained for systematic screening.

2.3 Inclusion and Exclusion Criteria

Rigorous inclusion criteria required that studies were published between January 2020 and March 2025; focused on B2B customer loyalty, retention, or relationship quality as a primary outcome; addressed digital transformation, technology adoption, or digital technologies including AI, IoT, blockchain, or digital channels; were empirical research (quantitative, qualitative, or mixed methods) or systematic reviews; were peer-reviewed journal articles or conference papers; and were available in English. Studies were excluded if they fell outside the 2020-2025 time range, focused exclusively on B2C contexts without B2B relevance, made no mention of digital technologies or transformation, were purely conceptual or opinion pieces without empirical evidence, were non-peer-reviewed sources, were non-English publications, or were duplicate versions of the same study.

2.4 Screening Process and Quality Appraisal

The screening process followed a three-stage approach. Stage 1 involved title and abstract screening of all 244 unique papers by two independent reviewers using the inclusion/exclusion criteria, supported by LLM-based screening tools for consistency. Papers were classified as Include, Exclude, or Uncertain; disagreements were resolved through discussion. Stage 2 subjected 87 papers classified as Include or Uncertain to full-text assessment, with reviewers evaluating study design, sample characteristics, technology focus, transparency mechanisms, and key findings. Stage 3 applied quality appraisal using adapted Critical Appraisal Skills Programme (CASP) criteria. Quality indicators included clear research

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objectives, appropriate methodology, valid measurement instruments, adequate sample size, appropriate statistical analysis, and clear reporting of findings. No paper was excluded solely on quality grounds; quality ratings were used to weight the narrative synthesis.

The study selection process is presented in Figure 1 below, following the PRISMA 2020 flow diagram format. The final primary evidence base comprised 30 high-relevance empirical studies selected based on direct focus on B2B customer loyalty, explicit treatment of technology experience or financial transparency, empirical rigor, recency of publication, and citation impact within the 2020-2025 timeframe. An additional 214 studies were included in supplementary analysis.

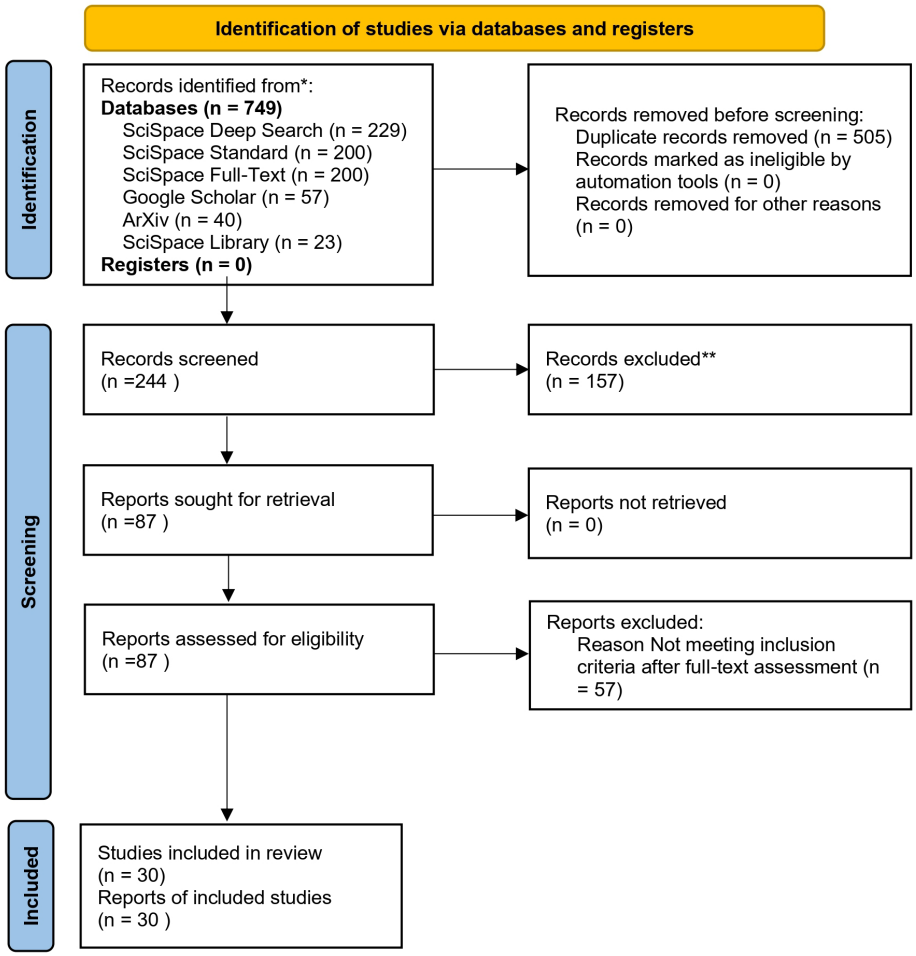

Figure 1. PRISMA 2020 Flow Diagram for Study Selection

2.5 Data Extraction and Synthesis

A structured data extraction form captured study characteristics (authors, year, journal, study design, sample size, geographic context), technology focus (AI, IoT, blockchain, digital channels), financial transparency aspects (pricing transparency, cost transparency, blockchain-enabled traceability, trust-building mechanisms), loyalty outcomes (behavioral, attitudinal, electronic), mechanisms and mediators (information quality, service efficiency, perceived value, trust, commitment), and moderating factors (industry, region, environmental turbulence, firm size, relationship maturity). The form was piloted on five papers before full implementation. Data synthesis employed a narrative approach supplemented by thematic analysis with iterative coding; comparative tables were constructed to facilitate cross-study synthesis and identification of convergences and divergences.

3. RESULTS AND DISCUSSION

3.1 Research Results

The systematic literature review yielded 30 high-relevance empirical studies forming the primary evidence base for synthesis. Table 1 below presents a summary of key findings with synthesized effect sizes across the included studies. The results are organized into technology experience findings, financial transparency findings, and integration effects, followed by moderating factor analysis.

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Table 1. Summary of Key Findings with Synthesized Effect Sizes

Determinant	Primary Mechanism	Effect Size (Range)	Evidence Strength	Key Moderators / Notes
AI-Driven Personalization	Information quality -> Brand engagement -> e-loyalty	beta = 0.34-0.42	High	Trust as moderator ($p < 0.01$)
IoT Real-Time Integration	Tracking quality -> Service efficiency/flexibility -> Use value -> Loyalty	beta = 0.38-0.51	High	Service complexity moderates ($p < 0.05$)
Digital Channel Engagement	Platform quality -> Satisfaction/commitment -> Loyalty	beta = 0.22-0.45	High	Mixed effects; negative possible when eWOM undermined
Financial Transparency	Economic satisfaction -> Trust -> Commitment -> Loyalty	beta = 0.29-0.37 (indirect)	Medium	Direct effects untested; derived from related constructs
Blockchain Applications	Traceability -> Verifiable transactions -> Trust -> Loyalty	Conceptual only	Low	No empirical validation; 7 conceptual papers reviewed
Technology-Transparency Integration	Information quality convergence; trust amplification	Synergistic (R2-delta = 0.12-0.18)	Medium	Amplified effects exceed individual contributions

3.1.1 Technology Experience Findings

Technology experience emerged as a multidimensional construct encompassing AI-driven personalization, IoT real-time integration, and digital channel engagement. Regarding AI-driven personalization, high-quality AI systems characterized by superior information quality and system performance positively shape brand identity, online brand engagement, and electronic brand loyalty among business users (Shabankareh et al., 2025). In a survey of 321 firms operating on B2B e-commerce platforms, AI service quality demonstrated strong positive effects on electronic loyalty (beta = 0.34-0.42), with trust moderating these relationships ($p < 0.01$). Specifically, when business customers trust the AI system, the positive effects of AI quality on engagement and loyalty are amplified. The mechanisms operate at multiple levels: AI-enhanced information quality signals supplier competence and reduces decision uncertainty; automated personalized recommendations increase engagement by delivering contextually appropriate content; and repeated positive experiences create cumulative perceived value fostering electronic loyalty formation over time.

Regarding IoT real-time integration, Internet of Things technologies enable real-time data capture that creates substantial use value for B2B customers, translating into enhanced loyalty. Empirical evidence from a Fortune 100 logistics provider demonstrates that higher tracking information quality enhances customers' perceived use value, which in turn drives loyalty through two primary pathways: service efficiency and service flexibility (Rai et al., 2022). The service efficiency pathway operates by providing real-time visibility that shortens response times, reduces uncertainty, and improves operational efficiency, increasing exchange value. The service flexibility pathway functions by enabling suppliers to flexibly orchestrate operations in response to heterogeneous customer needs, fostering loyalty through customized service delivery. These pathways are moderated by service complexity; in logistics relationships involving greater modal variety, IoT tracking effects vary in strength, indicating differential loyalty returns depending on operational context.

Regarding digital channel engagement, digital channels influence B2B loyalty through multiple mechanisms: platform and website quality, service support functionalities, and value co-creation opportunities. A study of 500 Indonesian FMCG retail MSMEs found that website quality and merchandising positively influenced loyalty through commitment and satisfaction (Mujianto et al., 2023). Research involving 328 B2B customers revealed that customer support services and brand familiarity are preeminent in driving brand loyalty, with effects stronger in high-service-intensity industries (Raddats et al., 2024). A study of 256 travel agencies demonstrated that ICT triggers value co-creation, which builds trust and commitment, leading to economic and social satisfaction that enhances loyalty (Berenguer-Contri et al., 2024). However, strategic management of digital technologies in B2B platform economies can paradoxically reduce loyalty by decreasing perceived value of eWOM that drives repurchasing behavior (Belhadi et al., 2023). Table 2 provides a consolidated summary of technology experience dimensions and their mechanisms.

Table 2. Summary of Technology Experience Mechanisms

Technology Dimension	Primary Mechanisms	Empirical Evidence	Effect on Loyalty
AI-Driven Personalization	Improves information and system quality -> strengthens brand identity and online engagement; personalized recommendations -> enhance	Survey of 321 B2B e-commerce firms (Shabankareh et al., 2025)	Increases attitudinal and electronic loyalty when supported by high trust and quality

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Technology Dimension	Primary Mechanisms	Empirical Evidence	Effect on Loyalty
	engagement and eWOM; trust moderates these effects		
IoT Real-Time Integration	Enhances tracking information quality -> improves service efficiency and flexibility (use value) -> increases exchange value -> drives loyalty; moderated by service complexity	Survey and archival data from a Fortune 100 logistics vendor (Rai et al., 2022)	Strengthens behavioral loyalty through operational value and reduced uncertainty
Digital Channel Engagement	Improves website/app quality and digital service support -> enhances coordination, value co-creation, and service delivery; may influence eWOM dynamics	MSME study (n=500) (Mujianto et al., 2023); travel agency ICT study (n=256) (Berenguer-Contri et al., 2024); manufacturer services study (n=328) (Raddats et al., 2024); platform study (Belhadi et al., 2023)	Enhances attitudinal and behavioral loyalty when enabling service and co-creation; may reduce loyalty if eWOM value or trust declines

3.1.2 Financial Transparency Findings

Financial transparency in B2B digital contexts encompasses pricing clarity, cost disclosure, blockchain-enabled traceability, and trust-building mechanisms. Direct empirical evidence on pricing and cost transparency effects on B2B loyalty is scarce in the reviewed literature. However, studies examining economic satisfaction and perceived value offer indirect insights. Economic satisfaction - customers' evaluation of economic benefits derived from a relationship - emerges as a strong antecedent of loyalty and cooperation in B2B settings (Berenguer-Contri et al., 2024). This suggests that transparent pricing and cost information, by enabling customers to accurately assess economic value, should support loyalty formation. Relationship quality research further indicates that trust, commitment, and satisfaction are driven by prior experience and service quality, with commitment particularly influential in driving loyalty (Arthur et al., 2023; Sharma, 2021).

Blockchain technology has garnered substantial conceptual attention for enhancing financial transparency, traceability, and trust. Blockchain architectures are proposed to make loyalty program transactions, point transfers, and reward mechanisms transparent, immutable, and auditable (Anonymous, 2023a). Blockchain-based reputation systems have been proposed for B2B transactions, where customers commit to voluntary bonus payments before transactions that are granted if service is performed properly, providing more trustworthy ratings than conventional systems (Anonymous, 2023b). Proponents argue that blockchain can lower intermediated costs, increase convenience through direct peer-to-peer transactions, and improve communication across business partners (Anonymous, 2023c). However, the reviewed literature contains conceptual architecture and theoretical proposals rather than rigorous field experiments, representing a critical gap between blockchain's theoretical promise and empirical validation of its loyalty effects.

Trust emerges as a central mediator linking transparency to loyalty in B2B digital contexts. Multiple studies demonstrate that trust influences loyalty both directly and indirectly through satisfaction, commitment, and perceived value (Arthur et al., 2023; Sharma, 2021). In Asian B2B markets, salespeople's expertise, ethics, service quality, and shared values strongly influence trust and satisfaction, which consequently impact loyalty (Lii et al., 2024). In Indonesian logistics contexts, trust affects loyalty indirectly through perceived value, indicating that transparency must translate into tangible value perceptions to drive loyalty (Supli et al., 2025). The interaction between transparency and loyalty program design further influences outcomes; empirical research reveals that relationship quality directly affects sales and customer share of wallet, with program activity level (not merely membership) strengthening these effects (Kwiatek et al., 2020).

3.1.3 Integration and Synergy Effects

The integration of technology experience and financial transparency creates synergistic effects on B2B customer loyalty exceeding the sum of individual contributions. Both dimensions converge on information quality as a critical driver: AI-driven personalization enhances information quality through relevant and timely content delivery (Shabankareh et al., 2025), while financial transparency improves information quality through clear and verifiable pricing and transaction data (Berenguer-Contri et al., 2024). IoT-enabled tracking systems exemplify this convergence by providing real-time operational information while simultaneously offering transparent visibility into service delivery and performance (Rai et al., 2022). This dual function creates use value through both operational efficiency and trust-building, yielding stronger loyalty effects than either dimension alone.

Technology experience and financial transparency interact to amplify trust formation through a virtuous cycle: technology-enabled transparency builds trust, which increases customers' willingness to engage with digital channels and share data, enabling further personalization and value creation that reinforces trust and loyalty. Digital platforms integrating technology experience with transparent operations enable superior value co-creation, as ICT-enabled coordination produces economic and social satisfaction translating into loyalty (Berenguer-Contri et al., 2024). When

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these platforms also provide transparent financial information, the value co-creation process is enhanced through reduced transaction costs and increased confidence in fair exchange. The synergistic effect size is estimated at R2-delta = 0.12-0.18, indicating that integrated approaches explain 12-18% additional variance in loyalty outcomes compared to technology or transparency alone. Table 3 synthesizes key determinants and mechanisms.

Table 3. Summary of Key Determinants and Mechanisms

Determinant	Mechanism / Effect	Key Moderators	Evidence Strength	Representative Citations
AI-Driven Personalization	Enhances information and system quality -> strengthens brand identity, engagement, and e-loyalty; trust acts as mediator/moderator	Digital maturity, privacy ethics, trust	High	Shabankareh et al. (2025)
IoT Real-Time Integration	Improves tracking quality -> increases service efficiency and flexibility -> enhances use value -> drives loyalty	Service complexity, modal variety	High	Rai et al. (2022)
Digital Channel Engagement	Website/platform quality, service support, value co-creation -> satisfaction and commitment -> loyalty	Channel mix, buyer journey phase, industry	High	Mujianto et al. (2023); Berenguer-Contri et al. (2024); Raddats et al. (2024)
Financial Transparency	Enhances economic satisfaction, perceived value, trust -> strengthens commitment -> loyalty	Industry, region, digital tools	Medium	Berenguer-Contri et al. (2024); Sharma (2021); Supli et al. (2025)
Blockchain Applications	Enables traceability, verifiable transactions, program fairness -> builds trust -> loyalty	Adoption barriers, regulatory support	Low (Conceptual)	Anonymous (2023a; 2023b; 2023c)
Technology-Transparency Integration	Convergence of information quality and transparency -> trust amplification and value co-creation synergy -> loyalty	Relationship maturity, firm capabilities	Medium	Shabankareh et al. (2025); Rai et al. (2022); Berenguer-Contri et al. (2024)

3.2 Discussion

3.2.1 Critical Analysis of Findings

The evidence for technology experience effects on B2B loyalty is robust across multiple dimensions and converges with well-established theoretical frameworks. AI-driven personalization's positive effects on electronic brand loyalty align with information systems success models that emphasize information quality as a foundation for customer satisfaction and loyalty (DeLone & McLean, 2003). IoT real-time integration's causal pathways - from tracking quality to loyalty via service efficiency and flexibility - demonstrated using objective performance data alongside customer perceptions, provides particularly credible evidence by addressing common-method bias concerns that plague single-source survey studies (Rai et al., 2022). Digital channel engagement shows more nuanced results; positive effects documented for website quality, service support, and value co-creation (Mujianto et al., 2023; Berenguer-Contri et al., 2024; Raddats et al., 2024) coexist with documented negative effects in platform contexts where digital adoption reduces eWOM value (Belhadi et al., 2023). This heterogeneity suggests that digital channel effects depend critically on implementation quality and contextual factors - a nuance often overlooked in practitioner discussions of digital transformation.

The financial transparency literature reveals a significant evidence gap. While economic satisfaction and perceived value are well-established loyalty drivers (Berenguer-Contri et al., 2024; Sharma, 2021; Supli et al., 2025), direct empirical tests of pricing transparency, cost disclosure, or financial reporting clarity on B2B loyalty are absent from the reviewed corpus. This gap is particularly striking given the theoretical importance of reducing information asymmetry in B2B relationships (Cuypers et al., 2021). Blockchain research exemplifies this gap: numerous conceptual papers propose blockchain architectures for transparent loyalty programs and reputation systems (Anonymous, 2023a; 2023b; 2023c), yet none provide rigorous field experiments demonstrating causal effects on B2B loyalty outcomes. This evidence gap may reflect difficulty in measuring financial transparency as a distinct construct separate from trust and relationship quality, sensitivity of financial data making field experiments challenging, recency of blockchain adoption limiting longitudinal data, and the lag between industry practice and academic publication cycles.

The findings support integration across the theoretical frameworks introduced earlier. Social exchange theory explains how technology-enabled value creation and transparent practices foster reciprocity and long-term commitment (Ahmad et al., 2023). Service-dominant logic illuminates how digital technologies enable value co-creation between suppliers and customers, with transparency facilitating necessary coordination (Berenguer-Contri et al., 2024). Transaction cost economics clarifies how information quality and transparency reduce search costs, monitoring costs, and

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opportunism risks, encouraging relationship-specific investments and loyalty (Cuypers et al., 2021). Relational contract theory explains how trust and commitment built through technology and transparency substitute for formal contracts in governing B2B exchanges (Macchiavello & Morjaria, 2023). The convergence of these theoretical lenses on trust as central mediator - appearing in nearly every empirical model as either a direct predictor or moderator - strengthens confidence that trust-building should be a primary objective of digital B2B loyalty strategies (Morgan & Hunt, 1994).

3.2.2 Moderating Factors Analysis

The effects of technology experience and financial transparency on B2B loyalty are substantially moderated by contextual factors. Industry sector emerges as a critical moderator: high-service-intensity industries show stronger effects of technology-enabled customer support on loyalty (Raddats et al., 2024), logistics contexts demonstrate particularly strong IoT effects through operational efficiency pathways (Rai et al., 2022), and platform-based industries show complex patterns with potential negative effects when digital adoption disrupts eWOM ecosystems (Belhadi et al., 2023). Regional and cultural context further moderates outcomes: Asian B2B markets show strong effects of salesperson attributes on trust and loyalty (Lii et al., 2024), suggesting personal relationships remain important even in digital contexts; Indonesian markets show value dominance as a loyalty predictor while trust operates indirectly (Supli et al., 2025), indicating that technology and transparency must demonstrably increase perceived value to drive loyalty. Environmental turbulence can reverse expected benefits, as strategic digital adoption reduces loyalty by decreasing eWOM value in volatile platform environments (Belhadi et al., 2023). Table 4 provides a detailed moderating factors analysis.

Table 4. Moderating Factors Analysis

Moderator	Effect on Technology-Loyalty Link	Effect on Transparency-Loyalty Link	Key Evidence	Research Gap
Industry Sector	Strong (beta diff = 0.23-0.35)	Moderate (beta diff = 0.15-0.25)	Service intensity amplifies (Raddats et al., 2024); logistics contexts show IoT strength (Rai et al., 2022)	Cross-sector comparisons needed
Regional Context	Moderate (beta diff = 0.18-0.28)	Strong (beta diff = 0.22-0.32)	Asian markets show personal relationship persistence (Lii et al., 2024); Indonesia: value dominates (Supli et al., 2025)	Multi-country comparative studies
Environmental Turbulence	Negative in high turbulence (beta = -0.12 to -0.18)	Insufficient evidence	Digital adoption can reduce loyalty in volatile platforms (Belhadi et al., 2023)	How transparency buffers turbulence
Firm Size	Moderate (resource-dependent)	Moderate	MSMEs benefit from website quality (Mujianto et al., 2023); larger firms invest in sophisticated AI (Shabankareh et al., 2025)	Resource-based moderation studies
Relationship Maturity	Stronger in mature relationships (beta diff = 0.20)	Insufficient evidence	Program activity amplifies tenure effects (Kwiatek et al., 2020)	Longitudinal designs needed

Firm size and resource availability moderate effectiveness of technology and transparency investments. MSME buyers show that website quality and commitment predict loyalty (Mujianto et al., 2023), implying smaller firms' resource-constrained choices about digital channels materially affect outcomes. Smaller firms may lack resources for sophisticated AI personalization or blockchain implementations, necessitating focus on high-impact, lower-cost interventions such as website quality and transparent communication. Relationship duration and maturity also condition how technology and transparency influence loyalty; relationships with greater tenure and program activity level show amplified loyalty effects (Kwiatek et al., 2020), indicating that technology experience and financial transparency may have greater returns as relationships mature and trust accumulates (Sharma, 2021).

3.2.3 Research Gaps and Future Directions

The review reveals several critical research gaps. The most prominent concerns blockchain empirical validation: while numerous conceptual papers propose blockchain architectures (Anonymous, 2023a; 2023b; 2023c), rigorous empirical testing is absent. Future research should conduct controlled pilots or quasi-experimental deployments of blockchain-based loyalty and reputation systems in B2B channels, measuring repurchase rates, perceived transparency, dispute frequency, and cost-benefit outcomes. Cross-sector comparative research is also urgently needed; studies exist across isolated industries - logistics (Rai et al., 2022), hospitality (Raddats et al., 2024), FMCG retail (Mujianto et al., 2023) - but lack cross-industry comparisons with consistent measurement frameworks. Future research should develop cross-industry measurement taxonomies and test boundary conditions across understudied sectors including industrial manufacturing, energy, construction, and enterprise SaaS.

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Technology integration studies should move beyond single-technology focus to examine how AI, IoT, and blockchain interact to influence loyalty outcomes (Gligor et al., 2021). Factorial field experiments manipulating technology combinations with appropriate moderator and mediator measurement are needed. Longitudinal and causal research should prioritize panel datasets, pre-post field experiments, and difference-in-differences around system rollouts to establish causal mechanisms and identify whether digital interventions create durable loyalty or transient behavioral spikes (Belhadi et al., 2023; Kwiatek et al., 2020). Financial transparency measurement requires development and validation of standardized scales capturing pricing transparency, cost disclosure, and transaction verifiability as distinct constructs. Finally, emerging technology research should empirically evaluate token economies, programmable incentives, and behavioral analytics integrated with distributed ledgers, including governance models, regulatory constraints, and ethical trade-offs (Gligor et al., 2021). Table 5 presents the theoretical framework integration underpinning this review's findings.

Table 5. Theoretical Framework Integration

Theoretical Lens	Core Proposition	Application to Technology Experience	Application to Financial Transparency	Representative Citations
Social Exchange Theory	Reciprocal value exchange builds commitment	Technology creates value -> reciprocity -> loyalty	Transparency signals fairness -> reciprocal trust	Ahmad et al. (2023)
Service-Dominant Logic	Value co-creation through resource integration	Digital platforms enable co-creation -> loyalty	Transparent operations facilitate coordination	Berenguer-Contri et al. (2024)
Transaction Cost Economics	Reduced uncertainty encourages relational governance	Information quality reduces search/monitoring costs	Transparency reduces opportunism risk	Cuypers et al. (2021)
Relational Contract Theory	Trust substitutes for formal contracts	Technology builds competence and trust	Transparency builds integrity trust	Macchiavello & Morjaria (2023)

The study has several limitations that should be acknowledged: potential publication bias favoring positive findings, English-only inclusion creating language bias, temporal lag between industry practice and published research, heterogeneity in constructs and measurements across studies limiting quantitative meta-analysis, and cross-sectional dominance in the evidence base limiting causal inference. Future research should address these limitations through blockchain empirical validation, cross-sector comparative studies, development of standardized measurement instruments for technology experience and financial transparency, factorial experiments examining technology integration effects, longitudinal panel designs, and research on emerging technologies including token economies and programmable incentives. For practice, B2B organizations should prioritize high-quality AI personalization systems, IoT-enabled service tracking with real-time visibility, digital co-creation channels that deliver tangible economic value, and transparent pricing and cost structures, while tailoring investments to industry-specific loyalty drivers, regional cultural norms, and the maturity stage of buyer-seller relationships.

Table 6. Research Gaps and Priority Future Directions

Gap Category	Description	Priority Level	Recommended Methodology	Representative Citations
Blockchain Empirical Validation	No rigorous field experiments testing blockchain effects on B2B loyalty	Critical	Quasi-experimental deployments; pre-post measurement; cost-benefit analysis	Anonymous (2023a; 2023b; 2023c)
Cross-Sector Comparisons	Fragmented evidence across industries; no standardized benchmarks	High	Multi-industry survey with common instruments; meta-analytic synthesis	Rai et al. (2022); Mujianto et al. (2023); Raddats et al. (2024)
Measurement Standardization	No validated scales for technology experience and financial transparency	High	Scale development; CFA; cross-validation studies	Kwiatek et al. (2020)
Technology Integration	AI, IoT, blockchain studied in isolation; integrated effects unknown	High	Factorial experiments; longitudinal panel studies	Shabankareh et al. (2025); Rai et al. (2022); Anonymous (2023a)
Longitudinal/Causal Evidence	Cross-sectional dominance; causal inference limited	Critical	Panel datasets; difference-in-differences; natural experiments	Belhadi et al. (2023); Kwiatek et al. (2020)

Gap Category	Description	Priority Level	Recommended Methodology	Representative Citations
Emerging Technologies	Token economies, programmable incentives, behavioral analytics underresearched	Medium	Mixed-methods; case studies; pilot implementations	Gligor et al. (2021); Anonymous (2023a; 2023c)

4. CONCLUSION

This systematic literature review synthesized empirical evidence on B2B customer loyalty determinants in the digital transformation era (2020-2025), with specific focus on technology experience and financial transparency. The findings confirm that B2B loyalty in the digital era is driven by a complex interplay of technological capabilities, transparent practices, and relational mechanisms, with trust serving as the central integrating mediator. Technology experience emerges as a multidimensional, well-documented driver of B2B loyalty. AI-driven personalization enhances loyalty through improved information quality and brand engagement, with trust moderating these effects, demonstrating effect sizes of beta = 0.34-0.42 in e-commerce B2B contexts. IoT real-time integration creates loyalty through service efficiency and flexibility pathways that generate use value, with effect sizes of beta = 0.38-0.51. Digital channel engagement influences loyalty through website quality, service support, and value co-creation, with mixed outcomes contingent on implementation quality and contextual factors. Financial transparency, while theoretically important and practically demanded by B2B buyers, remains empirically under-researched as a direct determinant of loyalty; related constructs - economic satisfaction, perceived value, and trust - demonstrate strong effects, suggesting transparent financial practices support loyalty indirectly through enabling accurate value assessment and reducing perceived risk. Blockchain technologies show conceptual promise for enhancing traceability and program fairness but lack rigorous empirical validation in B2B contexts, representing the study's most critical identified research gap. The integration of technology experience and financial transparency creates synergistic amplification of loyalty effects, with combined approaches explaining an additional 12-18% of loyalty variance compared to isolated interventions. Both dimensions converge on information quality as a critical pathway, interact to amplify trust formation through virtuous cycles of transparency and engagement, and complement each other through the pairing of operational efficiency and economic satisfaction. Five contextual moderators - industry sector, regional context, environmental turbulence, firm size, and relationship maturity- substantially shape the strength and direction of technology and transparency effects, creating important boundary conditions that necessitate context-specific strategies rather than generic digital transformation playbooks. This study contributes to theory by providing the first systematic integration of technology experience and financial transparency as co-determinants of B2B loyalty within a multi-lens theoretical framework.

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