A COMPREHENSIVE FRAMEWORK: VENDOR SELECTION COMPLIANCE AS AN INTERVENING VARIABLE IN THE EFFECT OF COGNITIVE BIAS, DIGITAL TRUST, AND RISK MANAGEMENT ON LOGISTIC EQUITABLE PROCUREMENT SYSTEMS AT PT. POS INDONESIA

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Abstract

This research develops and tests a comprehensive framework examining how cognitive bias, digital trust, and risk management influence logistics equitable procurement through vendor selection compliance as a mediating mechanism. Employing partial least squares structural equation modeling (PLS-SEM) with bootstrapping analysis on data from PT Pos Indonesia's procurement operations, the research tested ten hypotheses across 255 respondents. The findings reveal that procurement equity emerges through integrated psychological, technological, and governance pathways, with vendor selection compliance serving as a critical mediating mechanism. The research contributes novel insights into operationalizing equitable procurement systems in emerging economy logistics organizations. Practically, the research provides guidance for implementing fair, transparent, and resilient vendor selection procedures by integrating behavioral debiasing initiatives, digital infrastructure investments, and compliance enforcement mechanisms. These findings address critical gaps in understanding how multidimensional organizational interventions collectively shape procurement fairness outcomes.

Keywords: Cognitive Bias, Digital Trust, Risk Management, Logistics Equitable Procurement, Vendor Selection Compliance

INTRODUCTION

Modern logistics procurement has undergone profound transformation driven by technological advancement, intensified competition, and escalating sustainability demands across global supply chains. Digitalization, regulatory changes, and stakeholder expectations for greater accountability and transparency have fundamentally reshaped the field, requiring organizations to adapt their vendor selection practices to increasingly complex operational environments (Jüttner, Peck, & Christopher, 2003). Mounting empirical evidence indicates that cognitive biases continue to exert substantial influence on procurement professionals' vendor selection decisions, often resulting in suboptimal supplier choices and undermining principles of equity and fairness in organizational buying behavior. Cognitive phenomena such as anchoring bias, confirmation bias, status quo bias, and loss aversion systematically distort evaluation processes and lead decision-makers to overweight prior relationships or perceived risk at the expense of objective performance indicators. Recent integrative frameworks demonstrate that these biases can be systematically identified and mitigated through structured interventions that improve decision outcomes when properly implemented across organizational hierarchies (Ketchen & Craighead, 2022). The challenge lies in developing comprehensive approaches that address multiple bias types simultaneously while maintaining operational efficiency and strategic alignment with organizational procurement objectives (Tang, 2006).

The intersection between cognitive biases and emerging digital trust mechanisms in logistics procurement constitutes a critical empirical and theoretical gap demanding rigorous investigation, particularly as organizations increasingly rely on digital platforms for vendor management. As procurement transitions from traditional paper-based processes to sophisticated electronic bidding platforms and blockchain-enabled supply chain ecosystems, understanding how trust formation influences technology adoption and usage behavior becomes paramount. Digital trust building in technology-mediated transactions requires careful attention to initial trust formation processes, structural assurances, and the integration of trust and risk perceptions with perceived usefulness and ease of use (McKnight, Choudhury, & Kacmar, 2002). Research in B2B e-commerce contexts demonstrates that trust mechanisms significantly influence organizational willingness to engage in technology-mediated procurement relationships, with trust perceptions directly affecting platform adoption and usage intentions (Gefen, Karahanna, & Straub, 2003). Personality-based antecedents of bias have been found to predict decision-making patterns among procurement professionals, with evidence demonstrating that these professionals frequently overestimate their ability to judge supplier reliability, leading to costly vendor selection errors (Tversky & Kahneman, 1974).

Table 1.
Project & Financial Performance by Year

Year 2024	Project Count	Total Revenue (Rp/Million)	Total Project Value (Rp)	Total Profit (Rp)	Average Profit Margin (%)
Regional 4	886	29 M	25 M	3 M	12 %
Regional 5	450	56 M	44 M	2.80 M	14 %

Source: Company Data (2024)

Regional 4 demonstrates significantly higher project volume (886 projects) generating Rp 29 million revenue but achieves only 12% profit margin. Regional 5 manages fewer projects (450) while generating higher revenue (Rp 56 million) with superior 14% profit margin. This indicates Regional 5 pursues a quality-focused, margin-oriented strategy on higher-value contracts, while Regional 4 pursues volume-driven operations with lower per-project profitability. The 2 percentage point margin differential suggests that variations in vendor selection approaches and procurement governance produce meaningful financial consequences, underscoring the operational significance of equitable procurement practices in determining organizational profitability.

The regional differences in project volume and profitability patterns are substantiated by examining vendor concentration dynamics within each region. Vendor selection patterns reveal critical differences in procurement portfolio diversification and incumbent dependence, which directly reflect the psychological biases, digital trust mechanisms, and compliance rigor characterizing each region's procurement governance. The following analysis disaggregates the top vendors by region, exposing variation in vendor concentration levels and providing empirical evidence of how cognitive biases such as anchoring bias and status quo bias manifest differently across organizational contexts.

Table 2.
Top Vendors by Region

Regional	Top Vendor	Total Project
Regional 4	Samudera Raya Indojaya Logistics	44
	PT Harba Logistics Indonesia	44
	CV RNN Trans Jaya	39
	CV Wisesa Manunggal	35
	PT Trans Barokah Sejahtera	33
	CV Zafran Cargo dan Logistik	32
Regional 5	CV Arzhan Bersama Logistik	193
	PT Abian Hakiki Transport	22
	PO Sersan	22
	CV Jawa Express Transport (JET)	22
	PT Jena Solusi Transport	18
	Khuzen Trans	17

Source: Company Data (2024)

Regional 4 shows a balanced and equitable vendor portfolio, with the leading contractors handling similar project volumes and no single vendor dominating the pipeline. This distribution indicates competitive procurement practices, diversified operational risk, and stronger governance that maintains bargaining power and supports fairer, more resilient vendor relationships. By contrast, Regional 5 is heavily dependent on a single vendor, with CV Arzhan Bersama Logistik holding 193 projects while the next competitor manages only 22, signaling extreme concentration and high operational risk. Such dominance greatly strengthens the vendor’s bargaining position, increasing exposure to service disruption, cost escalation, and reduced accountability, and reflects persistent status quo bias in procurement decisions.

Table 3.
Verified Vendor & Win Vendor by Region

Regional	Verified Vendor	Win Vendor
Regional 4	50	46
Regional 5	97	48

Source: Company Data (2024)

Regional 4 demonstrates mature and efficient vendor governance, with 50 verified vendors and a high win conversion rate of 92% (46 winning vendors), indicating streamlined qualification processes, rigorous evaluation criteria, and effective vendor selection mechanisms that eliminate underperforming competitors. This lean vendor base reflects disciplined procurement governance, reduced administrative overhead, and enhanced focus on reliable, performance-validated partners that support operational efficiency and cost control.

In contrast, Regional 5 exhibits substantial vendor oversupply, with 97 verified vendors competing for only 48 winning positions, representing a critically low 49.5% conversion rate. This significant gap between qualified and active vendors indicates extensive redundancy, inefficient vendor management, and wasted procurement administrative resources evaluating non-competitive suppliers. The oversupply phenomenon creates operational complexity, inflates evaluation costs, disperses procurement attention across marginal vendors, and masks underlying governance weaknesses that enable continued dependency on dominant incumbents. This inefficiency suggests substantial managerial and cost inefficiencies, whereby excessive vendor proliferation without corresponding operational engagement generates unnecessary procurement overhead while paradoxically failing to achieve competitive market discipline or vendor portfolio equity.

Table 4.
Vendor Contact Information Completeness by Region

Regional	Vendor No Email	Vendor No Phone	Vendor No Email and Phone
Regional 4	12	17	5
Regional 5	16	37	6
Total	28	54	11

Source: Company Data (2024)

The vendor contacts' information completeness data reveals concerning gaps in basic administrative data validation across both regions, with Regional 5 exhibiting substantially higher deficiency rates. Regional 5 contains 16 vendors lacking email (16% of 97 verified vendors) and 37 lacking phone numbers (38% of 97 vendors), compared to Regional 4's 12 missing emails and 17 missing phone numbers from its 50-vendor base. These gaps represent critical governance failures, as email and telephone contact information constitute fundamental administrative requirements for baseline vendor qualification and operational communication protocols. The absence of verified contact details compromises vendor verification authenticity, obstructs communication chain continuity, and enables non-

compliant vendors to bypass established governance thresholds, indicating that PT Pos Indonesia's vendor qualification frameworks lack fundamental data validation controls. Email and telephone verification should serve as mandatory gateway criteria preceding vendor registration approval, yet the persistence of incomplete records across 54 vendors (28 lacking email, 37 lacking phone) demonstrates that procurement systems have not systematized these elementary compliance checkpoints, creating operational vulnerability and undermining transparency in vendor engagement processes.

REVIEW OF LITERATURE

Digital trust has emerged as a critical enabler of transparent and equitable vendor selection, particularly as organizations transition from traditional paper-based procurement to sophisticated electronic bidding platforms and blockchain-enabled supply chain ecosystems (Hassan, S. (2025). Trust in digital systems encompasses multiple dimensions including system reliability, data security, information integrity, and institutional transparency, each influencing procurement professionals' willingness to adopt digital platforms for vendor evaluation decisions (Söllner, Hoffmann, & Leimeister, 2016). Research demonstrates that digital trust significantly mediates relationships between technological system characteristics and actual usage behavior, suggesting procurement platforms will fail to achieve equity and efficiency objectives if users lack confidence in digital mechanisms (Lankton, McKnight, & Tripp, 2015). Within supply chain contexts, digital trust enables transparent information sharing, real-time performance monitoring, and collaborative vendor management systems that reduce information asymmetries and mitigate cognitive biases in supplier selection processes (Sunny, J., Undralla N., & Pillai V.M., 2020). The conceptualization of digital trust in procurement requires distinguishing between trust in technological artifacts and trust in institutional governance mechanisms, with initial trust formation depending critically on structural assurances including encryption protocols, authentication mechanisms, and third-party verification systems (McKnight, Carter, Thatcher, & Clay, 2011).

Risk management has emerged as a strategic imperative in contemporary supply chain contexts, encompassing systematic identification, assessment, mitigation, and monitoring of threats that potentially disrupt organizational operations (Emrouznejad, Abbasi, & Sıcakyüz, 2023). Within procurement frameworks, risk management addresses vulnerabilities in vendor selection and contract execution processes, recognizing that inadequate risk assessment mechanisms expose organizations to supplier defaults, cost overruns, and delivery delays (Olanrewaju, Olatunji, & Akinradewo, 2024). Contemporary risk management emphasizes comprehensive supplier risk assessment incorporating financial health evaluation, capacity verification, and quality system audits as foundational prerequisites for informed vendor selection (Giannakis, M., & Papadopoulos, T,2016). The integration of digital trust infrastructure with structured risk management protocols creates synergistic effects wherein transparent platforms enable real-time risk monitoring, while systematic risk identification reduces bias-driven selection errors and enhances procedural fairness (Pournader, M., Shi, Y., Seuring, S., & Koh, S. C. L. (2020). Within emerging market contexts, procurement risk management confronts distinctive challenges including regulatory volatility, infrastructure limitations, and heightened information asymmetries that

collectively amplify operational uncertainties, necessitating more rigorous due diligence and adaptive risk mitigation strategies (Rubaj, 2021).

Logistics equitable procurement represents a paradigm shift from traditional cost-optimization frameworks toward comprehensive value creation approaches integrating economic efficiency with social justice principles, ensuring fair treatment, inclusive participation opportunities, and distributable benefits across diverse supplier populations (Theodorakopoulos, Ram, & Kakabadse, 2014). This encompasses distributive justice (equitable allocation of procurement opportunities), procedural justice (fairness of evaluation criteria and selection mechanisms), and interactional justice (respectful communication and transparent information sharing with suppliers regardless of size or incumbency status) (Alghababsheh, M., Gallear, D., & Saikouk, T, 2022). Within emerging economy contexts characterized by institutional voids and power imbalances, equitable procurement mechanisms function as critical governance instruments preventing discriminatory vendor exclusions and promoting inclusive supplier ecosystems that enhance market competition (Malacina et al., 2022). The operationalization of logistics equitable procurement integrates organizational justice frameworks with sustainable procurement scholarship, encompassing transparency of qualification criteria, equal opportunity for vendor participation, non-discriminatory evaluation procedures, accountability mechanisms, and stakeholder inclusiveness (Buyukozkan & Gocer, 2018).

Vendor Selection Compliance emerges as a pivotal mediating mechanism that systematically translates psychological, technological, and governance inputs into measurable fairness outcomes within organizational procurement systems. Empirical evidence demonstrates that procurement regulatory compliance significantly mediates relationships between strategic procurement inputs and operational outcomes, indicating compliance mechanisms functionally transform intended strategies into operational realities (Changalima, I.A, Ismail I.J., Mwaiseje, S.S., 2022). Vendor Selection Compliance strengthens the effects of cognitive bias reduction by institutionalizing structured evaluation protocols that constrain heuristic-driven shortcuts, enhances digital trust impact by mandating transparent documentation requirements, and amplifies risk management effectiveness by formalizing due diligence standards (Sarawa, D. I., & Mas'ud, A, 2020). The positioning of Vendor Selection Compliance as a comprehensive mediating framework represents a substantive theoretical contribution, addressing critical gaps in understanding how psychological, technological, and governance mechanisms interact to jointly shape procurement equity outcomes (Ratemo, B. M., & Karanja, N, 2017). Comprehensive operationalization of research constructs is essential for ensuring measurement clarity, theoretical precision, and empirical validity throughout research execution.

Table 5.
Operational Definitions of Research Variables

Variable	Researcher & Year	Operational Definition
Cognitive Bias	Földesi & Sós (2024)	Systematic deviations from rational thinking and behavior that influence decision-making through experiences, intuition, and perceived phenomena, converting objective decisions into subjective interests.

	Ketchen & Craighead (2022)	Systematic deviations from rational judgment in strategic decision-making processes, manifesting across goal formulation, alternative generation, and evaluation selection stages.
	Fasolo, Heard, & Scopelliti (2024)	Systematic bias patterns mitigated through comprehensive organizational frameworks that significantly improve decision outcomes when properly implemented across hierarchies.
Digital Trust	Nowicka (2018)	Trust in digital supply chain management encompassing technological reliability, data security, and operational transparency, with stakeholders' confidence in digital systems critical for successful digital transformation.
	Guo (2022)	Reconstruction of interpersonal and system trust through digital technology, combining cognitive trust (practicality, commitment, honesty, benevolence) and emotional trust (preferences, beliefs).
	Kwon, Shin, Kim, & Usman (2021)	Trust-based commitment between supply chain partners, where trust-building processes represent critical constructs for successful supply chain operations despite technological capability evolution.
Risk Management	Emrouznejad, Abbasi, & Sıcakyüz (2023)	Implementation of proactive and reactive strategies for identifying, assessing, mitigating, and monitoring risks across five dimensions: competitiveness, operational responsiveness, decision-making capability, monitoring capability, and sustainability standardization.
	Negri, Cagno, Colicchia, & Sarkis (2021)	Systematic convergence of sustainability objectives with resilience capabilities, addressing sustainability risks, resilience risks, and integration mechanisms through collaborative governance and circular economy principles.
	Attia, A. M. (2024)	Integrated risk management combines proactive assessment with preventive maintenance through: (1) Risk Classification into operational, external, and strategic categories; (2) Quantitative Assessment using FMEA, FTA, and Monte Carlo simulation to evaluate probability, severity, and impacts; (3) Risk-Maintenance Optimization minimizing costs while meeting service constraints; and (4) Dynamic Monitoring via predictive analytics for real-time detection and coordinated response.
Vendor Selection Compliance	Novelty construct by Pical, B.A.J, Listiani M.E, & Mulyati, E (2025)	Vendor Selection Compliance is a comprehensive institutional framework systematically translating procurement policies into fair and transparent vendor selection practices. It encompasses five integrated dimensions: (1) Tender Transparency, proactive disclosure of bidding information including timelines, requirements, and evaluation criteria to all potential vendors; (2) Evaluation Clarity, objective and standardized evaluation methodologies with predetermined criteria and scoring protocols; (3) Vendor Competition, active encouragement of competitive bidding among diverse suppliers through removal of participation barriers; (4) Document Traceability, comprehensive procurement documentation systems creating auditable records of selection decisions and supporting rationales; and (5) Regulatory Compliance, systematic adherence to statutory requirements and organizational procurement policies throughout all vendor selection stages.
Logistic Equitable Procurement	Saputro, T. E., Figueira, G., & Almada-Lobo, B. (2022)	Comprehensive framework integrating multi-criteria vendor evaluation with risk assessment methodologies across different purchasing strategies, emphasizing economic viability, operational effectiveness, and strategic alignment in supplier selection processes.
	Al Hazza et al. (2022)	Integrated approach for supplier evaluation using systematic analytical methods that reduce subjective biases while enhancing transparency and accountability in vendor selection procedures.

	Haron & Mahzan (2019)	Ethical procurement implementation in business transactions through employee adherence to established ethical frameworks in logistics company operations.

Table 5 synthesizes six critical research gaps identified through comprehensive literature review, mapping the landscape of previous research achievements, articulating specific areas of insufficient understanding, and positioning the current study's novel contribution toward integrating cognitive bias mitigation, digital trust enhancement, and equitable procurement mechanisms within a coherent, empirically testable framework.

Table 6.
Critical and Research Gaps

Critical Gap	Previous Research	Research Gap	Role of Current Study in Filling the Gap
Cognitive Bias in Vendor Selection	Cognitive biases (anchoring, loss aversion, overconfidence, confirmation) significantly distort supplier evaluation and vendor selection decisions, systematically impairing decision-making quality (Wong, R. S. (2024; Ketchen & Craighead, 2022).	Limited frameworks address multiple bias types simultaneously in procurement; insufficient research on how personality traits interact with biases in vendor selection.	Develops a comprehensive framework integrating five cognitive bias dimensions and their mitigation through Vendor Selection Compliance, providing the first empirical model of bias-compliance-equity relationships.
Digital Trust in Procurement Systems	Blockchain technology enhances procurement transparency, security, and trust through immutable records and smart contracts (Hassan, S. (2025)	Insufficient research on digital trust mechanisms in B2B procurement; limited frameworks addressing trust-equity balance in digital platforms; lacking research on digital trust's influence on equitable vendor selection in emerging markets.	Operationalizes digital trust through five dimensions (security, integrity, reliability, transparency, confidence) specifically within logistics procurement, bridging digital trust theory and equitable procurement practice.
Vendor Selection Compliance as Mediator	Procurement compliance mediates relationships between planning and value creation, translating strategic inputs into operational outcomes (Changalima, I.A., Ismail I.J., Mwaiseje, S.S. (2022).	Insufficient understanding of compliance as behavioral mediator; lacking frameworks on how compliance translates psychological and technological inputs into equitable outcomes.	Theorizes and empirically tests Vendor Selection Compliance as critical mediating mechanism translating cognitive bias mitigation and digital trust into measurable equitable procurement outcomes.

Logistics Equitable Procurement Systems	Public procurement frameworks emphasize transparency, fairness, stakeholder engagement, and accountability (Malacina et al., 2022; Mutua, Namusonge, & Kanali, 2019).	Insufficient frameworks on equity-focused procurement in logistics; lacking integration of behavioral, technological, and governance factors; limited understanding of operationalizing fairness principles in logistics vendor selection.	Conceptualizes Logistics Equitable Procurement as comprehensive outcome integrating distributive, procedural, and interactional justice, examining psychological, technological, and governance antecedents.

This literature synthesis identifies four critical research gaps justifying an integrated framework. Previous research established that cognitive biases distort vendor selection, yet lacks frameworks addressing multiple bias types simultaneously in logistics contexts. Digital trust is recognized as fundamental to procurement transparency, but limited research examines how digital trust dimensions specifically influence equitable vendor selection in emerging markets. Procurement compliance mediates strategic inputs into operational outcomes, yet existing literature treats compliance as bureaucratic requirement rather than behavioral conduit.

RESEARCH METHOD

The quantitative methodology employed in this study aligns with the objectivist epistemological stance, which prioritizes measurable phenomena and empirical validation through systematic data collection and statistical procedures (Creswell & Creswell, 2018). This approach facilitates the examination of causal relationships among constructs by utilizing numerical evidence and replicable analytical techniques, thereby ensuring the generalizability and external validity of research findings (Bryman, 2016). Quantitative research designs are particularly suited for hypothesis testing and theory validation, as they enable researchers to objectively assess relationships between variables while minimizing subjective interpretation (Field, 2018). Sample size determination followed the Slovin formula methodology with a 5% margin of error to ensure adequate statistical power and reliability of results (Taherdoost, 2016). The Slovin formula is widely recognized for its practicality and statistical robustness in social science research, particularly when complete population enumeration is impractical (Singh & Masuku, 2014). The formula application proceeded as follows:

$$n = N / (1 + N \times e^2)$$
$$n = 698 / (1 + 698 \times 0.05^2)$$
$$n = 698 / (1 + 698 \times 0.0025)$$
$$n = 698 / 2.745$$
$$n \approx 255 \text{ respondents.}$$

Data analysis employs Partial Least Squares Structural Equation Modeling (PLS-SEM), a variance-based approach particularly appropriate for exploratory and predictive research frameworks where the focus lies on theory development and explanation of variance in dependent constructs (Hair, Hult, Ringle, & Sarstedt, 2022). PLS-SEM is especially suitable when working with complex models containing multiple constructs, formative indicators, or non-normal data distributions (Sarstedt, Ringle, & Hair, 2021). The technique is increasingly preferred in supply chain management and organizational behavior research

due to its flexibility and robustness in handling small to moderate sample sizes and complex theoretical models (Richter, Cepeda-Carrion, Roldán, & Ringle, 2016).

Table 7.
Gender Distribution

Gender	Count	Percentage
Male	154	60%
Female	101	40%
Total	255	100%

Source: Questionnaire (2025)

The gender composition reveals a moderate predominance of male respondents (60%), while female participants constitute 40% of the sample. This distribution pattern suggests that logistics procurement functions within the surveyed organization demonstrate gender representation characteristics common in supply chain management roles across emerging market contexts, where male participation traditionally remains higher but gender diversity is progressively improving.

Table 8.
Job Position in PT Pos Indonesia

Position	Count	Percentage
Head Office Assistant Manager	1	0.39%
Regional Assistant Manager	1	0.39%
Deputy EGM	3	1.18%
Deputy Operations Vice President	1	0.39%
EGM	7	2.75%
EM	58	22.75%
Regional Executive Vice President	1	0.39%
Branch Manager	33	12.94%
Others	41	16.08%
Manager	41	16.08%
Head Office Manager	2	0.78%
Main Branch Office Manager	3	1.18%
Regional Senior Manager	3	1.18%
Supervisor	58	22.75%
Vice President	2	0.78%
Grand Total	**255**	**100%**

Source: Questionnaire (2025)

Executive roles make up less than 10% of the sample, whereas executive managers and supervisors make up the largest responder groups (22.75% each), suggesting that procurement choices primarily come from operational management levels. In procurement decision-making procedures, the significant representation of managers (16.08%), branch managers (12.94%), and mid-level employees guarantees a variety of viewpoints across organizational hierarchies.

Table 9.
Work Experience at PT Pos Indonesia

Work Experience	Count	Percentage
0-5 Years	94	36.86%
6-10 Years	70	27.45%
> 10 Years	91	35.69%
Grand Total	**255**	**100 %**

Source: Questionnaire (2025)

Across tenure cohorts, the workforce is very evenly represented, with new hires (36.86%), mid-career employees (27.45%), and senior staff (35.69%) making comparable contributions. This balance points to organizational continuity between the perspectives of the modern workforce and the institutional expertise required to modify procurement procedures.

Table 10.
Work Experience in Logistics Vendor Procurement

Work Experience	Count	Percentage
> 10 Years	37	14.51%
0-5 Years	152	59.61%
6-10 Years	66	25.88%
Grand Total	**255**	**100%**

Source: Questionnaire (2025)

Only 14.51% of the specialist procurement personnel has more than ten years of experience, while 59.61% have only 0–5 years. This lack of experience suggests that vendor procurement is a new or recently developed organizational function with little accumulation of domain-specific expertise.

Research Hypothesis

H1: Cognitive bias directly has a positive significant influence on logistics equitable procurement.
H2: Digital trust directly has a positive significant influence on logistics equitable procurement.
H3: Risk management directly has a positive significant influence on logistics equitable procurement.
H4: Cognitive bias has a positive significant influence on vendor selection compliance.
H5: Digital trust has a positive significant influence on vendor selection compliance.
H6: Risk management has a positive significant influence on vendor selection compliance.
H7: Cognitive bias indirectly has a positive significant influence on logistics equitable
H8: Digital trust indirectly has a positive significant influence on logistics equitable
H9: Risk management indirectly has a positive significant influence on logistics equitable procurement through vendor selection compliance.
H10: Vendor selection compliance directly has a positive significant influence on logistics equitable procurement.

Conceptual Framework

Conceptual framework below integrates behavioral economics and digital trust theory to examine how cognitive processes, technological confidence, and systematic risk management influence vendor selection compliance and logistics equitable procurement outcomes. The model operationalizes direct pathways through which cognitive bias, digital trust, and risk management affect procurement equity, alongside mediated pathways in which these antecedent factors operate through vendor selection compliance mechanisms. This dual pathway architecture reflects the complexity of procurement decision-making in logistics environments, where both cognitive and procedural factors interact to determine procurement equity and supplier fairness outcomes.

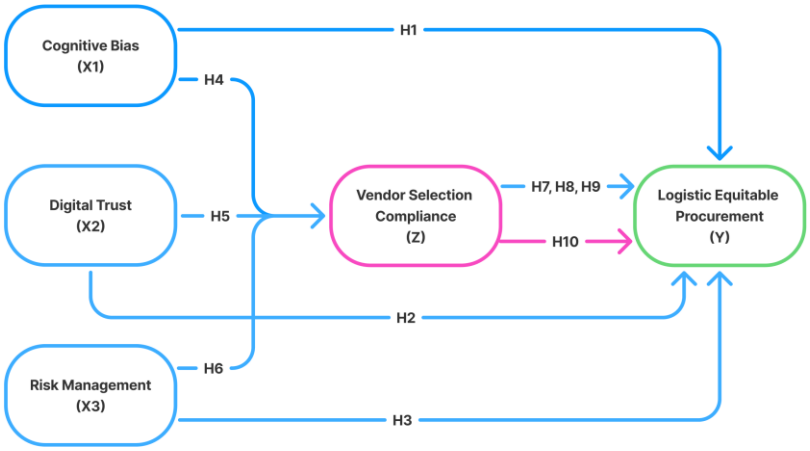

Figure 1.
Conceptual Framework

RESULTS AND DISCUSSION

The following table presents comprehensive reliability and validity results for all research variables, with interpretations of construct measurement quality and recommendations for measurement refinement or retention based on established psychometric standards.

Table 11.
Outer Model: Reliability and Validity

Variables	Indicators	Outer Loadings	Cronbach's α	Composite Reliability	AVE
Cognitive Bias (CB)			0.895	0.922	0.702
	Anchoring (CB1)	0.822			
	Confirmation (CB2)	0.857			
	Overconfidence (CB3)	0.848			
	Availability (CB4)	0.845			
	Status Quo (CB5)	0.817			
Digital Trust (DT)			0.860	0.899	0.641
	Security (DT1)	0.803			
	Integrity (DT2)	0.819			
	Reliability (DT3)	0.817			
	Transparency (DT4)	0.805			
	Confidence (DT5)	0.758			
Risk Management (RM)			0.733	0.830	0.510
	Risk Register Updated (RM1)	0.791			
	Risk Identification (RM2)	0.773			
	Risk Analysis (RM3)	0.786			
	Risk Mitigation (RM4)	0.773			
	Risk Monitoring (RM5)	0.333			
Vendor Selection Compliance (VSC)			0.766	0.843	0.527
	Tender Transparancy (VSC1)	0.434			
	Evaluation Clarity (VSC2)	0.804			
	Vendor Competition (VSC3)	0.788			

	Document Traceability (VSC4)	0.743			
	Regulatory Complieance (VSC5)	0.793			
Logistic Equitable Procurement (LEP)			0.468	0.682	0.353
	Inclusive Sourcing (LEP1)	0.103			
	Sustainability (LEP2)	0.341			
	Stakeholder Engagement (LEP3)	0.861			
	Social Impact (LEP4)	0.749			
	Equitable Pricing (LEP5)	0.579			

Source: Questionnaire processed with SmartPLS 3.0 (2025)

Cognitive Bias and Digital Trust show excellent reliability (α > 0.85) and validity (loadings > 0.75), confirming strong measurement quality. Risk Management and Vendor Selection Compliance demonstrate acceptable reliability but require indicator removal due to weak loadings: RM5 (0.333) and VSC1 (0.434). Logistic Equitable Procurement exhibits problematic measurement quality (α = 0.468, AVE = 0.353) with critically weak loadings on LEP1 (0.103) and LEP2 (0.341), necessitating indicator removal and potential construct refinement.

Table 12.
Discriminant Validity (Fornell-Larcker Criterion)

	CB	DT	RM	VSC	LEP
Cognitive Bias (CB)	0,838				
Digital Trust (DT)	-0,133	0,801			
Risk Management (RM)	0,368	0,505	0,714		
Vendor Selection Compliance (VSC)	0,156	0,428	0,302	0,726	
Logistic Equitable Procurement (LEP)	0,274	0,532	0,617	0,481	0,594

Source: Questionnaire processed with SmartPLS 3.0 (2025)

The Fornell-Larcker criterion confirms discriminant validity, with diagonal values (square root of AVE) exceeding all correlations in their respective rows and columns, indicating each construct is distinct. Cognitive Bias shows weak negative correlation with Digital Trust (r = -0.133), while Risk Management demonstrates the strongest relationship with Logistic Equitable Procurement (r = 0.617). Vendor Selection Compliance exhibits moderate correlations (0.156-0.428), supporting its role as a mediating variable.

Table 13.
R^2 (Coefficient of Determination)

Endogenous Construct	R^2	R^2 Adjusted	Classification	Variance Explained
Vendor Selection Compliance (VSC)	0,229	0,220	Weak	22.9%
Logistic Equitable Procurement (LEP)	0,516	0,508	Moderate	51.6%

Source: Questionnaire processed with SmartPLS 3.0 (2025)

Vendor Selection Compliance exhibits weak explanatory power (R^2 = 0.229), with independent variables accounting for only 22.9% of compliance variation, suggesting additional unmeasured antecedent factors influence compliance outcomes. Logistic Equitable Procurement demonstrates moderate explanatory power (R^2 = 0.516), explaining 51.6% of variance, indicating the research model substantially influences equitable

procurement outcomes through the mediating compliance mechanism. These results underscore the importance of vendor selection compliance as a critical intervening variable while identifying the need for future research exploring additional compliance determinants.

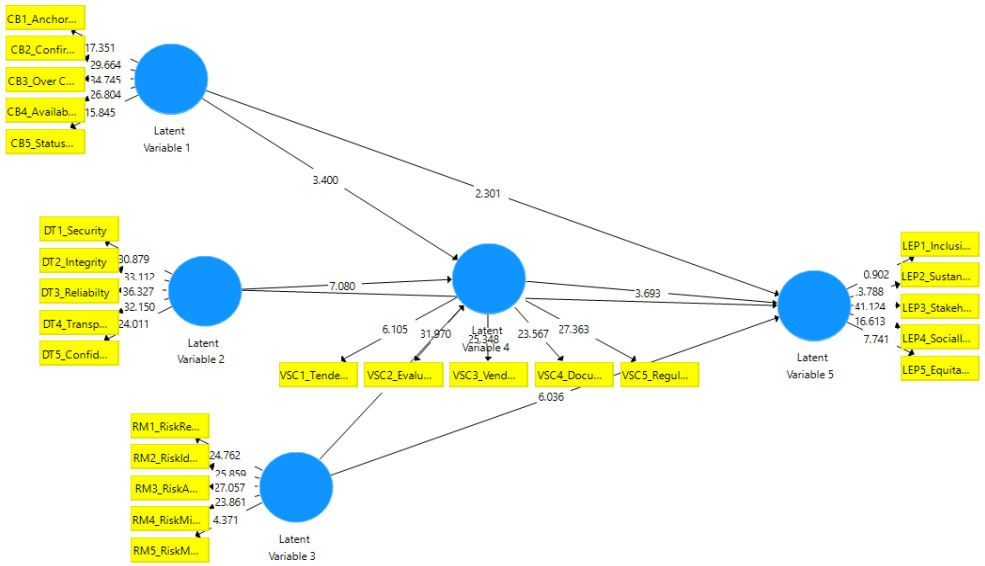

Figure. 2.
Bootstrapping: Path coefficient, outer loadings, outer weight with SmartPLS 3.0 (2025)

The PLS-SEM path diagram reveals that Digital Trust and Risk Management are the strongest predictors of Vendor Selection Compliance, with path coefficients of 7.080 and 6.036 respectively, demonstrating their critical importance in enabling fair procurement practices. Vendor Selection Compliance then mediates these effects and directly influences Logistics Equitable Procurement (3.693), confirming that compliance mechanisms translate trust and risk management into procurement equity outcomes.

Table 14.
Path Coefficient, Hypothesis Testing, T-Statistics, and P-Values Results

Path	β	Standard Deviation	T Statistics	P Values	Decision
CB → LEP	0.142	0.062	2.301	0.022	Significant
DT → LEP	0.270	0.058	4.634	0.000	Significant
RM → LEP	0.357	0.059	6.036	0.000	Significant
CB → VSC	0.223	0.066	3.400	0.001	Significant
DT → VSC	0.465	0.066	7.080	0.000	Significant
RM → VSC	-0.014	0.072	0.202	0.840	Not Significant
CB → VSC → LEP	0.052	0.022	2.333	0.020	Significant
DT → VSC → LEP	0.109	0.033	3.363	0.001	Significant
RM → VSC → LEP	-0.003	0.017	0.202	0.840	Not Significant
VSC → LEP	0.235	0.064	3.693	0.000	Significant

Source: Questionnaire processed with SmartPLS 3.0 (2025)

The model reveals that risk management practices are the primary drivers of equitable procurement, while digital trust mechanisms and compliance procedures play supporting roles. Cognitive biases, though significant, have weaker direct effects, indicating that systematic compliance protocols effectively mitigate their negative influences.

CONCLUSION

This comprehensive framework demonstrates that achieving logistics equitable procurement requires a multidimensional approach integrating cognitive awareness, technological infrastructure, and systematic governance mechanisms. The research reveals that procurement equity emerges through complementary pathways where digital trust mechanisms and vendor selection compliance procedures collectively counteract cognitive distortions while risk management practices establish foundational safeguards against procurement failures. By positioning Vendor Selection Compliance as a critical mediating mechanism, this study advances scholarly understanding of how organizations can translate psychological debiasing interventions and technological trust investments into measurable fairness outcomes within procurement systems operating in emerging economy contexts.

The practical implications of this research are particularly significant for logistics organizations in developing regions seeking to implement equitable, transparent, and resilient procurement systems. Organizations must recognize that procurement equity is not achieved through isolated interventions targeting individual psychological or technological factors, but rather through coherent integration of behavioral debiasing initiatives, digital infrastructure investments, and compliance enforcement mechanisms that collectively shape vendor selection practices and procurement outcomes. Future research should investigate the moderating roles of organizational culture, leadership commitment, and institutional context in determining the effectiveness of these equity-promoting mechanisms. Additionally, longitudinal studies examining how procurement equity initiatives evolve over time and comparative analyses across different organizational settings and supply chain structures would provide valuable insights into the sustainability and transferability of these findings.

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