



The Role of Cognitive Bias and Digital Trust in Bidding Systems on Fair Vendor Selection in Logistics Equitable Procurement in PT. Pos Indonesia

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Abstract. *This study analyze how cognitive biases and digital trust affect fair vendor selection and equitable procurement in electronic bidding systems at PT Pos Indonesia. Using survey data from 255 employees and decision makers, we found that cognitive biases (anchoring, confirmation, overconfidence, availability, and status quo) negatively impact procurement outcomes, while digital trust dimensions (security, integrity, reliability, transparency, and confidence) have positive effects. Fair vendor selection serves as a critical mediator between these factors and ethical procurement practices. The model explains 50.6% of variance in fair vendor selection and 35.4% in equitable procurement. These findings emphasize the need for both bias mitigation strategies and trust-enhancing digital platforms to achieve transparent and sustainable procurement decisions in logistics organizations.*

Keywords: Bidding System; Cognitive Bias; Digital Trust; Fair Vendor Selection; Logistic Equitable Procurement

1. Introduction

Modern logistics procurement increasingly depends on digital platforms, yet decision-making is often influenced by cognitive biases such as anchoring, confirmation, overconfidence, availability, and status quo. These biases undermine fair vendor selection, reduce transparency, and threaten equitable procurement outcomes. Conversely, digital trust including security, integrity, reliability, transparency, and confidence emerges as a critical enabler of fairness in vendor selection through electronic bidding systems.

This study introduces Fair Vendor Selection (FVS) as a new construct that integrates distributive, procedural, and interactional justice principles. FVS functions as a mediator that transforms cognitive bias management and digital trust into equitable procurement outcomes. The research employs a quantitative survey of 255 employees and decision makers at PT Pos Indonesia, analyzed using PLS-SEM to test causal relationships and mediation effects among cognitive bias, digital trust, fair vendor selection, and equitable procurement.

The central research question is how cognitive biases and digital trust influence fair vendor selection and equitable procurement in logistics organizations. The study aims to establish an integrated framework that enhances fairness, efficiency, and transparency in procurement. The findings are expected to provide practical recommendations, including bias mitigation strategies, the strengthening of digital trust platforms, and sustainable procurement practices that support both operational efficiency and social equity.

2. Methods

This study adopts a quantitative research design under a positivist paradigm to examine causal relationships among the studied variables. Data were sourced from 698 employees and decision makers at PT Pos Indonesia, with a sample of 255 respondents selected using Slovin's formula at a 5% margin of error. Data collection was carried out through a structured questionnaire measuring perceptions of cognitive bias, digital trust, fair vendor selection, and logistics equitable procurement. The data were analyzed using Partial Least Squares – Structural Equation Modeling (PLS-SEM), in accordance with accepted statistical standards, to assess validity, reliability, and hypothesis testing.

3. Results and Discussion

The results reveal that cognitive biases including anchoring, confirmation, overconfidence, availability, and status quo have a significant negative impact on both fair vendor selection and logistics equitable procurement. In contrast, digital trust, represented by security, integrity, reliability, transparency, and confidence, shows a positive effect, although with moderate strength. PLS-SEM analysis indicates that all indicators meet validity and reliability standards, with factor loadings above 0.70 and strong Cronbach's alpha and Composite Reliability values.

The R^2 results demonstrate that the model has moderate explanatory power, with 50.6% of the variance in Fair Vendor Selection (FVS) explained by cognitive bias and digital trust, while 35.4% of the variance in logistics equitable procurement is explained by all three constructs. Hypothesis testing further confirms that cognitive bias undermines procurement fairness, whereas digital trust strengthens transparency and accountability in the bidding process.

The discussion emphasizes the mediating role of Fair Vendor Selection (FVS) in reducing the negative effects of cognitive biases while amplifying the positive influence of digital trust. FVS serves as a fairness mechanism that integrates distributive, procedural, and interactional justice principles, leading to more transparent, inclusive, and sustainable procurement practices. These findings align with Fasolo et al. (2024), who highlight the importance of bias mitigation strategies, and Booth & Theodossiou (2024), who stress the role of technology in improving supply chain decision quality.

From a practical perspective, the study suggests that logistics organizations, particularly PT Pos Indonesia, should adopt systematic bias mitigation strategies, strengthen digital trust platforms, and design vendor evaluation systems grounded in fairness. Theoretically, this research contributes by integrating psychological and technological perspectives into an equitable procurement framework, while also opening avenues for future research on the role of organizational culture, leadership, and emerging technologies in advancing procurement equity.

Table 1. Outer Model: Reliability and Validity

Variables	Indicators	Factor Loading	Cronbach's α	Composite Reliability	AVE	Decision
Cognitive Bias (CB)			0.892	0.923	0.706	Valid & Reliable

	Anchoring (CB1)	0.847			
	Confirmation (CB2)	0.893			
	Overconfidence (CB3)	0.889			
	Availability (CB4)	0.798			
	Status Quo (CB5)	0.856			
Digital Trust (DT)			0.903	0.928	0.721 Valid & Reliable
	Security (DT1)	0.765			
	Integrity (DT2)	0.834			
	Reliability (DT3)	0.924			
	Transparency (DT4)	0.889			
	Confidence (DT5)	0.812			
Fair Vendor Selection (FVS)			0.925	0.943	0.768 Valid & Reliable
	Criteria Transparency (FVS1)	0.778			
	Equal Opportunity (FVS2)	0.856			
	Non-Discrimination (FVS3)	0.901			
	Procedural Justice (FVS4)	0.882			
	Accountability (FVS5)	0.834			
Logistic Equitable Procurement (LEP)			0.912	0.928	0.732 Valid & Reliable
	Inclusive Sourcing (LEP1)	0.792			

Sustainability (LEP2)	0.865
Stakeholder Engagement (LEP3)	0.945
Social Impact (LEP4)	0.912
Equitable Pricing (LEP5)	0.834

Source: Questionnaire processed with SmartPLS 3.0 (2025)

Table 2. Discriminant Validity (Fornell-Larcker Criterion)

	CB	DT	FVS	LEP
Cognitive Bias (CB)	0.920			
Digital Trust (DT)	-0.141	0.901		
Fair Vendor Selection (FVS)	-0.706	0.315	0.949	
Logistic Equitable Procurement (LEP)	0.091	0.297	0.176	0.866

Source: Questionnaire processed with SmartPLS 3.0 (2025)

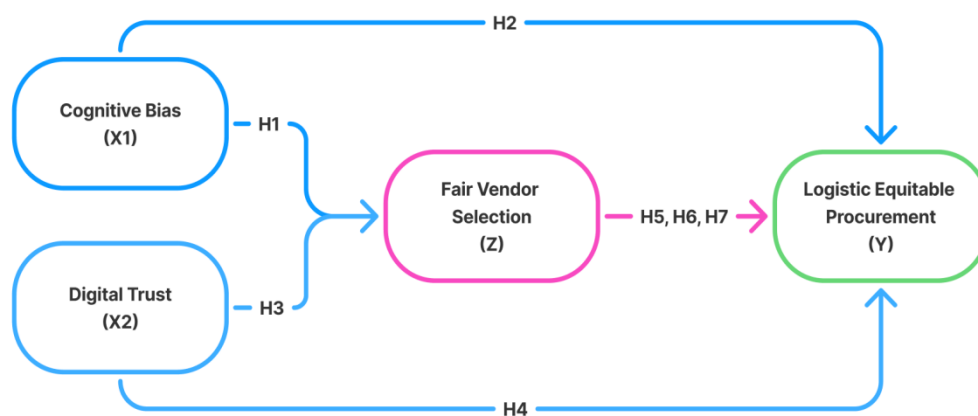


Figure 1. Conceptual Framework

Table 3. Path Coefficients

Influence Path	Coefficient
Cognitive Bias → Fair Vendor Selection	-0.676
Cognitive Bias → Logistic Equitable Procurement	-0.391
Digital Trust → Fair Vendor Selection	0.221
Digital Trust → Logistic Equitable Procurement	0.246
Fair Vendor Selection → Logistic Equitable Procurement	0.374
Cognitive Bias → Fair Vendor Selection → Logistic Equitable Procurement	-0.253

Digital Trust → Fair Vendor Selection → Logistic Equitable Procurement	0.083
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Source: Questionnaire processed with SmartPLS 3.0 (2025)

4. Conclusions

This study concludes that cognitive biases significantly undermine fair vendor selection and equitable procurement, while digital trust enhances transparency, accountability, and efficiency in procurement processes. Fair Vendor Selection (FVS) plays a critical mediating role by mitigating the negative effects of cognitive biases and strengthening the positive influence of digital trust, thereby creating more just and sustainable procurement mechanisms. The findings highlight the importance of implementing bias mitigation strategies, reinforcing digital trust platforms, and applying fairness-based vendor evaluation frameworks to support operational effectiveness and the achievement of social equity objectives in logistics procurement.

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