

Understanding Procurement Intentions for Using Aftermarket and Non-Genuine Spare Parts: Evidence from Indonesia's Heavy Equipment and Mining Industries

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ABSTRACT

This study examines procurement intention toward aftermarket and non-genuine spare parts in Indonesia's heavy equipment and mining industries. Using the Theory of Planned Behavior (TPB), this research analyzes how perceived financial benefit, perceived quality and technical fit, delivery performance, organizational context, peer reference, process ease, and vendor availability shape procurement intention through attitude, subjective norm, and perceived behavioral control. A quantitative survey was conducted with 215 practitioners from maintenance, procurement, logistics, supply chain, and operations functions. Data was analyzed using Partial Least Squares-Structural Equation Modeling (PLS-SEM). The results show that attitude, subjective norm, and perceived behavioral control significantly influence procurement intention, with attitude as the strongest predictor. Perceived financial benefit and quality and technical fit strongly shape attitude, while vendor availability and capacity strongly influence perceived behavioral control. The findings indicate that aftermarket procurement intention is not driven merely by lower prices, but by risk-adjusted value formed through lifecycle cost benefits, technical confidence, organizational acceptance, and supplier capability.

Keywords: Theory of Planned Behavior, procurement intention, aftermarket spare parts, non-genuine spare parts, heavy equipment, mining industry, PLS-SEM.

INTRODUCTION

Heavy equipment availability is a critical factor in mining operations because production continuity, material movement, and site productivity depend heavily on reliable equipment and spare-part availability. In asset-intensive industries, spare parts are strategic resources that influence maintenance performance, equipment uptime, and operating cost. Prior research emphasizes that organizations operating high-value capital assets require structured spare-parts planning and control to improve asset availability, supply-chain efficiency, and maintenance decision-making (Driessen et al., 2015; Zhang et al., 2021). Therefore, spare-part procurement is a strategic decision because incorrect part selection may create reliability problems, downtime risk, and higher lifecycle cost.

Genuine parts supplied by original equipment manufacturers and authorized dealers are commonly preferred because they are associated with technical compatibility, quality assurance, warranty protection, and lower perceived operational risk. However, cost pressure, supply-chain uncertainty, long lead time, and the need to optimize cost per hour have encouraged mining companies and contractors to consider aftermarket and non-genuine spare parts as alternative sourcing options. From a total cost of ownership perspective, spare-part decisions should not be

evaluated only from purchase price, but also from component lifetime, failure risk, maintenance cost, downtime consequences, warranty exposure, and lifecycle cost (Durán et al., 2016a, 2016b, 2023; Gransberg & O'Connor, 2015).

Previous studies on spare parts have mainly focused on inventory management, maintenance planning, logistics performance, demand forecasting, supplier selection, and lifecycle cost optimization (Driessen et al., 2015; González-Varona et al., 2020; Mahmudi et al., 2022; Pardede & Vanany, 2021; Zhang et al., 2021). Supplier selection studies also show that cost, quality, delivery, technical capability, warranty, claim policy, and supplier reliability are important procurement criteria (Asmara & Kusumah, 2021; Dickson, 1966; Verma & Pullman, 1998; Weber et al., 1991). However, these studies do not fully explain how procurement actors form intention to adopt aftermarket spare parts in a high-risk business-to-business environment.

To address this gap, this study applies the Theory of Planned Behavior (TPB). TPB explains that behavioral intention is shaped by attitude toward behavior, subjective norm, and perceived behavioral control (Ajzen, 1991; Bosnjak et al., 2020). In the procurement context, attitude reflects whether aftermarket parts are evaluated as financially and technically acceptable. Subjective norms reflect perceived organizational and social pressure, including corporate policy, management expectations, OEM influence, and peer reference. Perceived behavioral control reflects whether decision makers believe aftermarket procurement can be implemented through clear processes, vendor availability, supplier capability, warranty support, and logistics reliability. Recent procurement research also supports the relevance of TPB in organizational purchasing contexts (Hinterhuber & Khan, 2025).

The theoretical contribution of this study lies in extending TPB into a high-risk B2B procurement context. While TPB has been widely used to explain individual behavioral intention, its application in organizational procurement decisions involving technical risk, warranty exposure, downtime consequences, and cross-functional approval remain limited. This study contributes by integrating procurement-specific antecedents into TPB: perceived financial benefit, perceived quality and technical fit, and delivery performance as antecedents of attitude; organizational context and peer reference as antecedent of subjective norm; and process ease and vendor availability as antecedents of perceived behavioral control.

Based on this gap, this study aims to examine the behavioral mechanisms influencing procurement intention toward aftermarket and non-genuine spare parts in the Indonesian heavy equipment and mining industries. Data were collected from 215 practitioners in maintenance, procurement, logistics, supply chain, and operations, and were analyzed using PLS-SEM. The findings are expected to contribute to TPB literature by demonstrating how procurement-specific beliefs shape intention in a high-risk B2B context, while providing practical insight for selective aftermarket adoption.

LITERATURE REVIEW

Theory of Planned Behavior (TPB)

The Theory of Planned Behavior explains that intention is the immediate antecedent of behavior and that intention is shaped by attitude, subjective norm, and perceived behavioral control (Ajzen, 1991). Attitude refers to a favorable or unfavorable evaluation of performing a behavior, subjective norm reflects perceived pressure from important referents, and perceived behavioral control represents the perceived ease or difficulty of performing the behavior based on available resources and constraints. TPB remains widely used because it links belief structures to intention and provides a clear framework for empirical measurement (Ajzen, 2019; Bosnjak et al., 2020).

Although TPB was originally developed to explain individual behavior, it is relevant in organizational procurement because purchasing decisions are made by individuals operating within organizational rules, technical requirements, and approval structures. In B2B procurement, decision makers consider not only price, but also risk, supplier reliability, technical suitability, internal policy, and implementation feasibility. Therefore, TPB is appropriate for explaining procurement intention toward aftermarket and non-genuine spare parts because the decision involves personal evaluation, organizational influence, and perceived control over procurement execution.

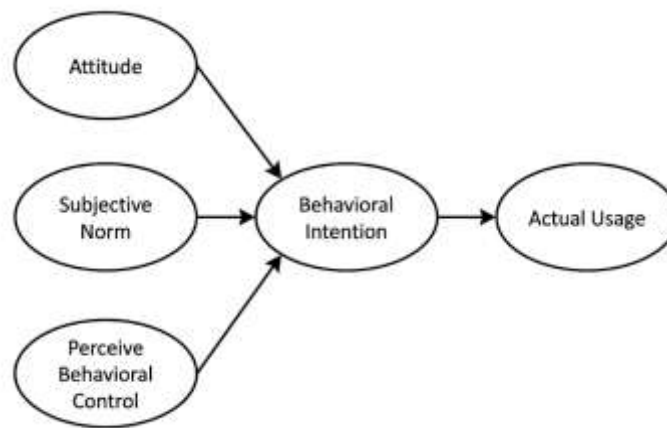


Figure 1. Theory of Planned Behavior (TPB) Framework

Total Cost Ownership

Total Cost of Ownership (TCO) is important for evaluating heavy-equipment and spare-part decisions because it considers total cost over the asset lifecycle, not only the initial purchase price. In heavy equipment operations, procurement decisions should consider acquisition cost, maintenance and repair cost, fuel consumption, wear parts, downtime consequences, depreciation, operating cost, and residual value. This perspective is relevant because a lower-priced component may generate higher total cost if it has shorter service life, requires more frequent replacement, or contributes to equipment downtime.

In spare-parts management, TCO and life-cycle cost perspectives are useful because spare-part policies influence maintenance performance, equipment availability, and long-term asset cost. Durán et al. (2016a, 2016b) emphasize that spare-parts management decisions are closely related to TCO and Life Cycle Cost because inventory policies, replacement decisions, availability, and maintenance strategies affect the economic performance of industrial assets. Durán et al. (2023) further explain that cost-of-ownership analysis should consider uncertainty, reliability, and risk. In this study, TCO is used as a conceptual lens to frame how procurement and maintenance practitioners evaluate aftermarket and non-genuine spare parts as a risk-adjusted value decision.

Conceptual Framework

This conceptual specifically for maps the behavior model applies the Theory of Planned Behavior (TPB) to explain procurement intention toward aftermarket spare parts in heavy-equipment mining operations. At the belief level, perceived financial benefit (PFB), perceived quality and technical fit (PQT), and perceived delivery performance (PDP) are specified as antecedents of attitude toward using aftermarket parts (ATT) (H4–H6). Contextual and social influences—capturing OEM policy, corporate rules, internal culture, and peer references—are modelled as antecedents of subjective norm (SN) (H7–H8). Operational enablers, such as process ease, approval flow, vendor availability, and logistics reliability, are modelled as antecedents of perceived behavioural control (PBC) (H9–H10).

Table 1. Theoretical Justification

Hypothesis	Relationship	Theoretical justification
H1	PFB → ATT	Financial and lifecycle value improve aftermarket evaluation.
H2	PQT → ATT	Quality, compatibility, and warranty protection reduce operational risk.
H3	PDP → ATT	Reliable lead time and delivery performance reduce downtime risk.
H4	OCI → SN	Corporate rules, OEM influence, and management shape normative pressure.
H5	PRR → SN	Peer experience functions as social proof in uncertain procurement.

H6	PEF → PBC	Clear SOPs, approval flow, and documentation increase implementation ease.
H7	VAC → PBC	Vendor capacity, stock, logistics, warranty, and service increase control.
H8	ATT → INT	Favorable evaluation strengthens procurement intention.
H9	SN → INT	Organizational and social support strengthens intention.
H10	PBC → INT	Perceived feasibility strengthens procurement intention.

Together, these relationships form the structural model to be tested using PLS-SEM and provide an integrated explanation of how belief-level evaluations and organisational context translate into procurement intention in the Indonesian heavy-equipment aftermarket.

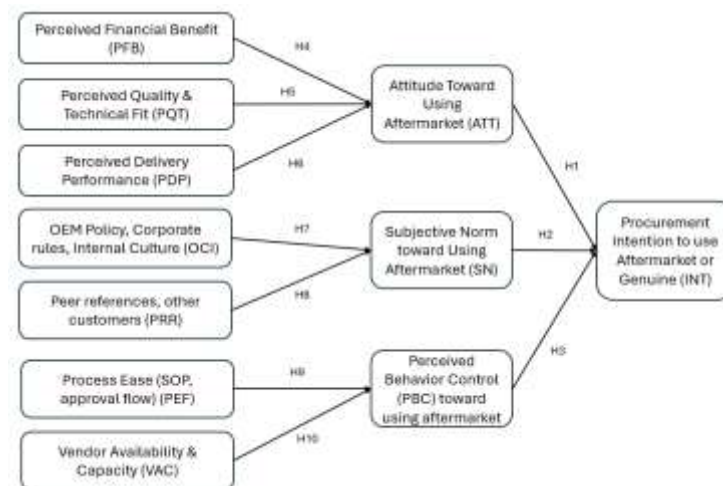


Figure 2. Conceptual Framework

METHOD

This study uses a quantitative cross-sectional survey design to examine the hypothesized relationships among procurement-related beliefs, TPB constructs, and procurement intention toward aftermarket and non-genuine spare parts. A cross-sectional design is appropriate because the study captures respondents' perceptions and intentions at one point in time and tests a structural model involving multiple latent variables.

The population consists of practitioners in the Indonesian heavy equipment and mining industries who are involved directly or indirectly in spare-part procurement, maintenance, supply chain, logistics, and operational decision-making. The final sample consisted of 215 valid respondents selected using purposive sampling. This sampling technique was applied because the research requires participants who understand spare-part selection, supplier evaluation, procurement approval, maintenance planning, or operational support for heavy equipment.

Primary data were collected using a structured questionnaire distributed through Google Forms. Respondents answered 43 questionnaire items measured on a five-point Likert scale ranging from 1 = strongly disagree to 5 = strongly agree. The Likert scale was used because it is suitable for measuring perceptions, attitudes, intentions, and self-reported evaluations in business research (Sekaran & Bougie, 2016).

The research model consists of seven procurement-related antecedents: perceived financial benefit, perceived quality and technical fit, perceived delivery performance, organizational context, peer reference, process ease, and vendor availability. These antecedents were linked to the three TPB constructs, namely attitude, subjective norm, and perceived behavioral control, which were then used to explain procurement intention toward aftermarket and non-genuine spare parts. All constructs were measured reflectively.

Data were analyzed using Partial Least Squares-Structural Equation Modeling (PLS-SEM) with SmartPLS 4. PLS-SEM was selected because the model contains multiple latent variables and has a prediction-oriented objective. The measurement model was evaluated using outer loading,

Cronbach's Alpha, rho_A, composite reliability, Average Variance Extracted (AVE), Fornell-Larcker criterion, and Heterotrait-Monotrait Ratio (HTMT). The structural model was evaluated using inner VIF, R-square, path coefficient, f-square, and bootstrapping significance testing (Hair et al., 2022; Henseler et al., 2015).

Hypothesis testing was conducted using bootstrapping with 5,000 subsamples, a two-tailed test, and a 5% significance level. A hypothesis was considered supported when the path coefficient was in the expected direction and the p-value was below 0.05 or the t-statistic was greater than 1.96.

1. RESULT

A total of 215 valid responses were analysed. Respondents were practitioners from maintenance, procurement and logistics, and operations functions in the Indonesian heavy equipment and mining industries. The respondent profile is presented in Table 2 below. The respondents were dominated by maintenance practitioners (59%), followed by procurement and logistics (22%) and operations (19%). Most respondents also had extensive experience: 83% had at least eight years of work experience. This profile is relevant because aftermarket spare-part procurement requires practical knowledge of equipment reliability, supplier capability, warranty risk, approval processes, and operational consequences.

Table 2. Respondent's Profiles

Category	Description	Quantity	Percentage (%)
Working Division	Maintenance	126	59
	Operation	41	19
	Procurement, Logistic	48	22
	Total	215	100
Working Experience	< 3 Years	17	8
	3 – 7 Years	20	9
	8 – 15 Years	38	18
	> 15 Years	140	65
	Total	215	100

Source: Taken from the processed data, 2026

The measurement model was evaluated to ensure that the indicators used in the questionnaire were able to measure each latent construct accurately and consistently. This stage is important before interpreting the structural model because the credibility of the relationship among constructs depends on the validity and the reliability of the instrument of measurement. The evaluation of the measurement model included outer loading, Cronbach's Alpha, rho_A, Composite Reliability, and Average Variance Extracted (AVE).

Table 3. Reliability and Convergent Validity Results

Construct	Outer Loading Condition	Cronbach's Alpha	rho_a	Composite Reliability	AVE	Assessment
ATT	ATT1 = 0.915; ATT2 = 0.924; ATT3 = -0.150; ATT4 = 0.871	0.646	0.891	0.811	0.618	Acceptable with concern; ATT3 must be reviewed
INT	0.721–0.898	0.849	0.875	0.898	0.689	Acceptable
OCI	OCI1 = 0.937; OCI2 = 0.929; OCI3 = 0.218	0.603	0.859	0.782	0.596	Acceptable with concern
PBC	PBC1 = 0.706; PBC2 = 0.922	0.547	0.679	0.803	0.674	Acceptable with caution
PDP	0.736–0.892	0.871	0.888	0.912	0.723	Acceptable

Construct	Outer Loading Condition	Cronbach's Alpha	rho_a	Composite Reliability	AVE	Assessment
PEF	0.887–0.888	0.731	0.731	0.882	0.788	Acceptable
PFB	0.433–0.821	0.846	0.877	0.882	0.492	Acceptable with caution
PQT	0.778–0.821	0.823	0.827	0.883	0.653	Acceptable
PRR	PRR1 = 0.978; PRR2 = -0.249	-0.089	0.205	0.352	0.509	Not acceptable
SN	SN1 = 0.067; SN2 = 0.830; SN3 = 0.909; SN4 = 0.860	0.686	0.835	0.803	0.565	Acceptable with concern
VAC	0.667–0.851	0.773	0.939	0.839	0.568	Acceptable with caution

Source: Taken from the data processed, 2026

Table 3 shows that INT, PDP, PEF, PQT, and VAC generally met acceptable reliability and convergent validity criteria. However, several indicators require attention. ATT3 and PRR2 showed negative loadings, SN1 showed a very low loading, and OCI3 showed a weak loading. The PRR construct has the most serious issue because it has negative Cronbach's Alpha and very low composite reliability. Therefore, paths involving PRR should be interpreted cautiously and the measurement items should be reviewed in future model refinement.

Table 4. Convergent Validity Summary

Construct	$\sqrt{\text{AVE}}$ (Diagonal)	Highest Correlation	Assessment
PFB	0.701	PQT = 0.754; ATT = 0.725	Discriminant validity concern
VAC	0.753	PBC = 0.806; PDP = 0.793	Discriminant validity concern
PRR	0.714	Lower than diagonal	Acceptable in Fornell–Larcker, but problematic in HTMT and cross-loading
Other Constructs	Higher than correlations	—	Acceptable

Source: Primary data processed, 2026

The Fornell–Larcker criterion is used to assess the discriminant validity by comparing the square root of AVE (diagonal values) with inter-construct correlations. A construct is considered to have adequate discriminant validity when its diagonal value is greater than its correlations with other constructs. Overall, most constructs (ATT, BEH, INT, OCI, PBC, PDP, PEF, PQT, PRR, and SN) satisfy this criterion, indicating acceptable discriminant validity within the TPB-based procurement model.

However, several concerns remain, as summarized in Table 5. The PFB construct shows a diagonal value (0.701) lower than its correlations with ATT (0.725) and PQT (0.754), suggesting overlap between perceived financial benefit, attitude, and perceived quality. Similarly, VAC has a diagonal value (0.753) lower than its correlations with PBC (0.806) and PDP (0.793), indicating overlap between vendor availability and capacity, perceived behavioral control, and delivery performance. Although PRR satisfies the Fornell–Larcker criterion (diagonal = 0.714), previous HTMT and cross-loading analyses identified measurement issues, particularly the negative loading of PRR2. Therefore, discriminant validity is generally acceptable, but the results for PFB, VAC, and PRR should be interpreted with caution.

Table 5. Heterotrait–Monotrait Ratio (HTMT) Matrix

Construct	ATT	INT	OCI	PBC	PDP	PEF	PFB	PQT	PRR	SN
ATT										
INT	0.863									
OCI	0.746	0.659								
PBC	0.827	0.873	0.765							
PDP	0.723	0.577	0.627	0.633						
PEF	0.760	0.729	0.651	1.044	0.674					
PFB	0.856	0.703	0.798	0.643	0.747	0.674				
PQT	0.883	0.687	0.705	0.720	0.786	0.712	0.902			
PRR	2.180	1.657	2.538	1.154	1.546	1.672	1.690	1.862		
SN	0.830	0.785	0.860	0.847	0.694	0.944	0.753	0.774	2.463	
VAC	0.884	0.789	0.841	0.964	1.064	0.906	0.839	0.906	2.232	0.908

Source: Primary data processed, 2026

Discriminant validity was assessed using the Heterotrait–Monotrait Ratio (HTMT) which was used to examine whether each latent construct in the model is empirically distinct from other constructs. In general, an HTMT value below 0.85 or 0.90 indicates acceptable discriminant validity, while values above 0.90 suggest potential overlap between constructs. Based on the HTMT result, several construct pairs exceeded the recommended threshold of 0.90, including PEF–PBC, PFB–PQT, SN–PEF, VAC–PBC, VAC–PDP, VAC–PEF, VAC–PQT, and VAC–SN. These results indicated that discriminant validity was not fully established for several constructs in the model.

The high HTMT value between PEF and PBC indicates that process ease is closely related to perceived behavioral control. In this research context, this overlap is reasonable because respondents may perceive an easy approval process, clear SOP, simple vendor registration, and manageable internal approval flow as part of their perceived ability to implement aftermarket procurement. Therefore, PEF and PBC may not be clearly separated in the respondents' perception because both constructs represent the feasibility and controllability of using aftermarket spare parts.

The HTMT results also show overlap among several supplier-related constructs, especially VAC with PBC, PDP, PEF, PQT, and SN. This indicates that respondents may perceive vendor availability and capacity as closely connected with delivery performance, process feasibility, technical fit, and organizational acceptance. In the heavy equipment and mining industries, this pattern is logical because supplier capability is not viewed as a single issue. Vendor capacity is often evaluated together with stock availability, lead time, warranty support, technical assistance, claim handling, and the ability to support operational continuity. As a result, respondents may find it difficult to distinguish vendor capability from delivery reliability, technical suitability, and ease of procurement execution.

The high HTMT value between PFB and PQT also suggests that respondents may connect financial benefit with perceived quality and technical fit. In the context of aftermarket spare parts, financial benefit is not evaluated only from purchase price. Respondents tend to evaluate financial value through cost per hour, component lifetime, reliability, replacement frequency, and the risk of downtime. Therefore, financial benefit and quality perception may overlap because better quality and longer lifetime directly influence the perceived economic value of aftermarket parts.

The strongest discriminant validity concern appears in PRR. The PRR construct shows extremely high HTMT values with several constructs, including ATT, INT, OCI, PBC, PDP, PEF, PFB, PQT, SN, and VAC. This indicates that PRR is not empirically distinct from other constructs in the current measurement model. The issue is also supported by the cross-loading result, where PRR2 shows a negative loading. Therefore, the peer reference construct should be interpreted with caution. The result suggests that the PRR indicators may need to be reviewed, revised, or removed in future model refinement to ensure that peer reference is measured as a distinct construct from subjective norm, organizational context, vendor capability, and perceived aftermarket value.

Overall, the HTMT assessment indicates that the measurement model contains several discriminant validity concerns. Nevertheless, the findings still provide useful exploratory insight into aftermarket procurement intention because the overlapping constructs reflect the integrated nature of spare-part decision-making in the heavy equipment and mining industries. In this context, financial benefit, technical quality, delivery reliability, supplier capability, organizational acceptance, peer references, and perceived feasibility are closely connected in respondents' evaluation of aftermarket and non-genuine spare parts. Therefore, the structural model can still be interpreted, but the interpretation should be made cautiously, especially for PRR and other construct pairs with HTMT values above 0.90.

Measurement Model Assessment

The measurement model was assessed before the structural model to ensure that each indicator could adequately represent its respective latent construct. The assessment included outer loading, Cronbach's Alpha, rho_A, composite reliability, Average Variance Extracted (AVE), and discriminant validity. The results show that several constructs met acceptable reliability and convergent validity criteria, particularly INT, PDP, PEF, PQT, and VAC. However, several indicators required further attention because they showed weak or negative outer loadings. Specifically, ATT3, OCI3, PRR2, and SN1 should be reviewed before final model refinement. The PRR construct requires the strongest caution because it shows negative Cronbach's Alpha and very low composite reliability, indicating that the construct may not be measured consistently by its indicators.

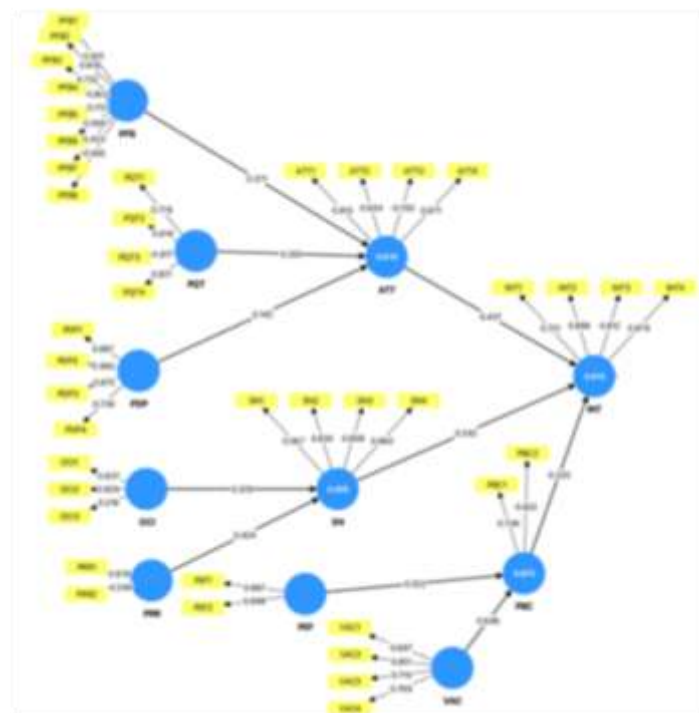


Figure 3. Measurement Model Diagram

Source: Taken from the research data primary, 2026.

Discriminant Validity

Discriminant validity was examined using the Heterotrait-Monotrait Ratio (HTMT) as a stricter assessment of construct distinctiveness. Although the Fornell-Larcker criterion appeared acceptable, several HTMT values exceeded the common threshold of 0.85 or 0.90. High HTMT values were found between PEF and PBC, PFB and PQT, VAC and PBC, VAC and PDP, VAC and PEF, VAC and PQT, and VAC and SN. In addition, PRR showed extremely high HTMT values with several constructs. These results indicate that discriminant validity was not fully established and that some constructs may overlap conceptually in the aftermarket procurement context.

Therefore, the interpretation of the structural model should be conducted carefully, especially for paths involving constructs with potential measurement overlap

Structural Model Assessment

The structural model was evaluated using inner VIF, R-square, path coefficients, and effect size. Since the final model focuses on procurement intention, the behavioral outcome construct was not included in the structural path analysis. Therefore, the model evaluates how procurement-related beliefs influence attitude, subjective norm, and perceived behavioral control, and how these three Theory of Planned Behavior constructs influence procurement intention.

All inner VIF values were below 3.00, indicating that multicollinearity was not a serious issue in the structural model. The R-square values show that the model has meaningful explanatory power. The model explains 61.0% of the variance in ATT, 45.5% of the variance in SN, 67.3% of the variance in PBC, and 61.0% of the variance in INT. The strongest endogenous construct explained by its antecedents is PBC, indicating that process ease and vendor availability jointly explain a large portion of perceived behavioral control in aftermarket spare-part procurement.

Table 6. Structural Model Measurement Results

Endogenous Construct	R-square	Adjusted R-square	Interpretation
ATT	0.610	0.604	Moderate
SN	0.455	0.450	Moderate
PBC	0.673	0.670	Moderate
INT	0.610	0.605	Moderate

Source: Taken from the research data primary, 2026.

Table 7. The Result of Path Analysis

Path	Path Coefficient	f-square	Interpretation
PDP → ATT	0.142	0.026	Weak positive contribution to attitude
PFB → ATT	0.371	0.142	Strongest antecedent of attitude
PQT → ATT	0.350	0.115	Positive contribution to attitude
OCI → SN	0.329	0.127	Positive contribution to subjective norm
PRR → SN	0.424	0.210	Significant but requires cautious interpretation
PEF → PBC	0.222	0.072	Positive contribution to perceived behavioral control
VAC → PBC	0.646	0.615	Dominant predictor of perceived behavioral control
ATT → INT	0.437	0.243	Strongest TPB predictor of procurement intention
SN → INT	0.242	0.081	Positive contribution to procurement intention
PBC → INT	0.220	0.073	Positive contribution to procurement intention

Source: Taken from the research data primary, 2026

The path analysis results show that attitude is the strongest direct predictor of procurement intention, followed by subjective norm and perceived behavioral control. This indicates that procurement intention toward aftermarket and non-genuine spare parts is mainly shaped by positive evaluation of aftermarket alternatives, social and organizational influence, and perceived control over the procurement process.

Among the antecedent variables, financial benefit and quality and technical fit are the strongest contributors to attitude. This suggests that procurement practitioners are more likely to develop a favorable attitude toward aftermarket spare parts when they perceive clear cost advantages and acceptable technical suitability. Delivery performance also contributes positively to attitude, although its effect is relatively weak.

For subjective norm, peer references show a stronger contribution than organizational context. However, this result should be interpreted cautiously because the PRR construct showed serious measurement reliability concerns in the measurement model. Organizational context also contributes positively to subjective norm, indicating that OEM policies, corporate rules, and internal procurement requirements influence perceived social or institutional pressure in aftermarket procurement decisions.

For perceived behavioral control, vendor availability and capability is the dominant predictor, with a large effect size. This finding indicates that procurement practitioners feel more capable of procuring aftermarket parts when vendors are available, responsive, technically capable, and able to support operational requirements. Process ease also contributes positively to perceived behavioral control, although its effect is smaller.

Overall, the structural model confirms that aftermarket procurement intention is not only influenced by price-related benefits. Instead, intention is formed through a combination of perceived financial value, technical fit, delivery performance, organizational influence, peer references, process ease, and vendor capability. The strongest route toward procurement intention is through financial benefit and quality and technical fit shaping attitude, and through vendor availability and capability shaping perceived behavioral control.

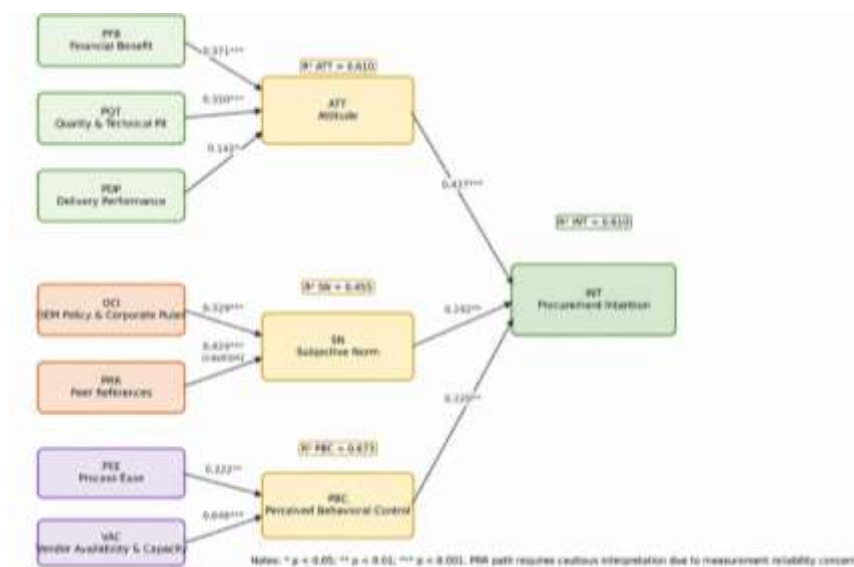


Figure 4. SEM-PLS Structural Path Results Summary

Source: Taken from the research data primary, 2026.

Hypothesis Testing

Bootstrapping was conducted using 5,000 subsamples, a two-tailed test, and a 5% significance level. All direct relationships in the model were statistically significant. The strongest direct effect was INT → BEH, confirming that procurement intention is the closest predictor of actual procurement behavior. The second strongest relationship was VAC → PBC, showing that vendor availability, capacity, warranty support, and after-sales capability strongly determine whether decision makers feel capable of implementing aftermarket procurement.

Table 8. The Hypothesis Testing Results

Hypothesis	Relationship	Original Sample	T-statistic	P-value	Result
H1	PFB → ATT	0.371	4.504	0.000	Supported
H2	PQT → ATT	0.350	4.381	0.000	Supported
H3	PDP → ATT	0.142	2.002	0.045	Supported
H4	OCI → SN	0.329	4.077	0.000	Supported
H5	PRR → SN	0.424	5.533	0.000	Supported with caution

Hypothesis	Relationship	Original Sample	T-statistic	P-value	Result
H6	PEF → PBC	0.222	2.616	0.009	Supported
H7	VAC → PBC	0.646	8.919	0.000	Supported
H8	ATT → INT	0.437	5.723	0.000	Supported
H9	SN → INT	0.242	3.482	0.001	Supported
H10	PBC → INT	0.220	3.360	0.001	Supported

Source: Taken from the research data primary, 2026.

Indirect and Total Effects

The indirect effect results show that PFB and PQT significantly influence procurement intention through attitude. This means that financial benefit and perceived quality do not directly form procurement intention; instead, they first shape a favorable attitude toward aftermarket and non-genuine spare parts, which then strengthens intention. In contrast, the indirect effect of PDP → ATT → INT was not significant at the 5% level, suggesting that delivery performance may improve attitude but is not strong enough by itself to generate procurement intention.

The results also show that OCI significantly influences procurement intention through subjective norm. This indicates that OEM policy, corporate rules, and organizational procurement requirements can shape perceived social or institutional pressure, which then affects the intention to procure aftermarket spare parts. Furthermore, VAC significantly influences procurement intention through perceived behavioral control, showing that vendor availability and capability make decision makers feel more capable and confident in implementing aftermarket procurement. However, PEF did not show a significant indirect effect through perceived behavioral control, indicating that easier procurement processes alone may be insufficient to strengthen procurement intention without stronger vendor capability, technical confidence, and organizational acceptance.

Table 9. Indirect and Total Effect Results

Indirect Path	Original Sample	T-statistic	P-value	Result
PFB → ATT → INT	0.162	3.399	0.001	Supported
PQT → ATT → INT	0.153	3.763	0.000	Supported
PDP → ATT → INT	0.062	1.797	0.072	Not supported
OCI → SN → INT	0.080	2.623	0.009	Supported
VAC → PBC → INT	0.142	3.264	0.001	Supported
PEF → PBC → INT	0.049	1.868	0.062	Not supported

Source: Taken from the research data primary, 2026.

The hypothesis testing results confirm that procurement intention toward aftermarket and non-genuine spare parts is shaped by three main TPB mechanisms: attitude, subjective norm, and perceived behavioral control. Attitude is mainly formed by financial benefit and quality and technical fit, while perceived behavioral control is strongly shaped by vendor availability and capability. These findings suggest that aftermarket procurement intention is not only driven by cost considerations, but also by technical confidence, organizational influence, and supplier capability.

DISCUSSION

Risk-Adjusted Value Route: PFB, PQT, and PDP through Attitude.

The findings show that attitude is the strongest predictor of procurement intention. This confirms that decision makers are more likely to consider aftermarket and non-genuine spare parts when they evaluate these alternatives positively. In the mining and heavy equipment context, this positive evaluation is not built only on purchase price. Decision makers must consider downtime risk, technical reliability, warranty exposure, equipment performance, and cost-per-hour implications.

Perceived financial benefit and perceived quality and technical fit are the strongest antecedents of attitude. This result supports the TCO perspective: a cheaper part becomes attractive only when it can deliver acceptable durability and does not increase total operating cost. Delivery performance also contributes positively to attitude, but its effect is weaker. This suggests that fast delivery alone is insufficient when quality, reliability, or lifecycle value remains uncertain. Therefore, aftermarket

suppliers should demonstrate field performance, technical compatibility, warranty protection, and cost-per-hour evidence rather than relying only on lower prices.

Organizational-Normative Route: OCI and PRR through Subjective Norm.

Subjective norms significantly influence procurement intention, indicating that aftermarket adoption is shaped by organizational expectations and social influence. In mining companies, spare-part procurement usually involves maintenance, procurement, finance, operations, and management. Corporate rules, OEM recommendations, warranty considerations, and approval procedures influence whether aftermarket parts are perceived as acceptable or risky.

Peer reference also shows a significant relationship with subjective norm, suggesting that experience from comparable users can reduce uncertainty and function as social proof. However, this finding must be interpreted cautiously because the PRR construct has reliability and discriminant validity concerns. The result remains useful as an exploratory indication, but future studies should refine the peer-reference indicators to distinguish peer influence from organizational pressure and supplier capability.

Implementation-Control Route: PEF and VAC through Perceived Behavioral Control

Perceived behavioral control significantly influences procurement intention, showing that decision makers need practical confidence before adopting aftermarket spare parts. Process ease has a positive effect on perceived behavioral control, meaning that clear SOPs, approval flows, supplier registration, and documentation can make aftermarket procurement more manageable. However, the indirect effect of process ease on intention is not significant, indicating that simple procedures alone are insufficient.

Vendor availability and capacity is the dominant predictor of perceived behavioral control. This finding is highly relevant because mining operations often depend on spare-part availability, technical support, claim handling, and delivery reliability. Decision makers feel more capable of adopting aftermarket parts when vendors can provide inventory readiness, responsive service, technical assistance, warranty support, and logistics reliability. Therefore, supplier capability is a central condition for converting aftermarket interest into procurement intention.

CONCLUSION

This study concludes that procurement intention toward aftermarket and non-genuine spare parts in the Indonesian heavy equipment and mining industries is shaped through a risk-adjusted value evaluation. The decision is not driven merely by lower purchase price, but by the combined perception of financial benefit, technical suitability, organizational acceptance, process feasibility, and supplier capability. The results confirm that attitude, subjective norm, and perceived behavioral control significantly influence procurement intention.

Attitude is the strongest predictor of procurement intention. Perceived financial benefit and perceived quality and technical fit are the strongest antecedents of attitude, while perceived delivery performance has a positive but weaker contribution. This indicates that aftermarket parts should be positioned not only as cheaper alternatives, but as procurement options supported by lifecycle value, acceptable durability, technical fit, warranty assurance, and reduced operational risk.

The theoretical contribution of this study lies in extending TPB into a high-risk B2B procurement context. By integrating procurement-specific antecedents into attitude, subjective norm, and perceived behavioral control, this study demonstrates that aftermarket procurement intention is formed through the interaction of economic evaluation, technical confidence, organizational pressure, and implementation feasibility. Practically, mining companies and aftermarket suppliers should focus on evidence-based quality assurance, cost-per-hour analysis, reliable availability, warranty support, and clear claim-handling mechanisms.

Several limitations should be acknowledged. The study uses a cross-sectional survey design and therefore cannot fully explain changes in procurement intention over time. The measurement model also shows indicators that require refinement, especially ATT3, OCI3, PRR2, and SN1, while PRR, PFB, and VAC indicate measurement and discriminant validity concerns. Future research should

refine these indicators, retest the model, and compare different component categories such as filters, ground engaging tools, undercarriage, tyre, hydraulic parts, and critical engine components.

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