

The Influence of Brand Trust, Product Quality and Perceived Value on Chinese Consumers' Purchase Intention of BYD New Energy Vehicles in Changzhou City, China

He Qing*, Ni Luh Sayang Telagawathi, Trianasari

Universitas Pendidikan Ganesha, Indonesia

Email: 1225790935@qq.com*

Keywords	Abstract
New Energy Vehicles; Purchase Intention; BYD; Theory of Planned Behavior; Brand Trust	China leads the global New Energy Vehicle (NEV) market, yet the gap between purchase intention and actual adoption persists, especially in Tier 2 cities like Changzhou where infrastructure, affordability, and technological uncertainty remain key concerns. This research investigates the determinants of consumer purchase intention toward BYD New Energy Vehicles (NEVs) in Changzhou, China, utilizing the Theory of Planned Behavior (TPB) framework integrated with domain-specific constructs. The research examined how Brand Trust, Product Quality, and Perceived Value influence purchase intention in a Tier 2 city context. Using a quantitative research design, structured surveys were collected from 200 respondents in Changzhou and analyzed using SPSS through multiple linear regression. Results indicate that Brand Trust ($\beta = 0.246, p < 0.05$), Product Quality ($\beta = 0.389, p < 0.05$), and Perceived Value ($\beta = 0.298, p < 0.05$) all exert significant positive effects on purchase intention. The findings reveal that Brand Trust serves as a critical factor in mitigating perceived technological risks, while Product Quality, particularly BYD's proprietary battery technology, acts as a primary adoption driver. Perceived Value significantly influences decision-making, reflecting sophisticated cost-benefit analysis in the post-subsidy era. This research contributes to NEV adoption literature by providing localized insights from an industrial hub and expanding TPB through quality and trust-based variables in high-involvement technology contexts. Managerial implications suggest that NEV manufacturers should prioritize regional branding strategies and infrastructural alignment to convert positive intentions into actual purchasing behavior.

INTRODUCTION

The global automotive industry is experiencing a paradigmatic shift from internal combustion engines to New Energy Vehicles (NEVs), driven by environmental concerns, technological innovation, and policy interventions (Kumar & Alok, 2020; Sanguesa et al., 2021). China has emerged as the world's largest NEV market, with the sector demonstrating exponential growth over recent years. Between 2019 and 2023, China's NEV market witnessed remarkable expansion, with production increasing from 1.242 million units to 9.587 million units, and sales growing from 1.206 million units to 9.495 million units (Wang et al., 2024). The market

penetration rate surged from 4.68% in 2019 to 31.60% in 2023, indicating a fundamental transformation in consumer automotive preferences (Zhang et al., 2023).

BYD (Build Your Dreams), as China's leading NEV manufacturer, has played a pivotal role in this market evolution (Liu et al., 2022). The company's strategic positioning combines vertical integration, proprietary battery technology (Blade Battery), and aggressive market expansion (Chen & Zhang, 2023). Changzhou, a Tier 2 city in Jiangsu Province, represents a critical battleground for NEV adoption. The city's NEV market grew from 8,420 units in 2020 to 45,670 units in 2023, with BYD's market share increasing from 18.5% to 34.2% during the same period. This growth trajectory occurs against the backdrop of subsidy phase-out, heightened competition, and evolving consumer expectations (Li et al., 2023).

Despite this market expansion, the conversion from purchase intention to actual purchase behavior remains incomplete. Understanding the psychological mechanisms driving NEV adoption in Tier 2 cities becomes crucial for sustainable market penetration (Huang & Ge, 2019; Wang et al., 2022). Changzhou's strategic importance stems from its industrial base, middle-class demographics, and representative position within China's urban hierarchy. The city's consumers face unique considerations: affordability concerns, charging infrastructure limitations, and technological uncertainty (Zhou et al., 2020).

While China's NEV market demonstrates impressive growth statistics, three critical knowledge gaps persist. First, existing research predominantly focuses on Tier 1 cities (Beijing, Shanghai, Shenzhen), with limited attention to Tier 2 cities where future growth potential resides (Tu & Yang, 2019; Xue et al., 2021). Second, the post-subsidy era presents new challenges as consumers must evaluate NEVs without substantial government incentives, shifting emphasis toward intrinsic product attributes and brand perceptions (Ma et al., 2019; Gong et al., 2020). Third, the psychological mechanisms linking brand perceptions, quality assessments, and value judgments to purchase intentions remain underexplored in the NEV context (Adnan et al., 2019; Mohamed et al., 2021).

This study addresses these gaps by investigating: How do Brand Trust, Product Quality, and Perceived Value influence Chinese consumers' purchase intention toward BYD NEVs in Changzhou?

The Theory of Planned Behavior, developed by Ajzen (1991), posits that behavioral intentions are determined by three conceptual antecedents: attitudes toward the behavior, subjective norms, and perceived behavioral control. TPB has demonstrated robust predictive validity across various domains, including technology adoption, sustainable consumption, and mobility choices (Ajzen, 2020; Bosnjak et al., 2020). In the NEV context, TPB provides a foundational framework for understanding how cognitive evaluations translate into purchase intentions (Wang et al., 2021).

However, TPB's generic structure requires domain-specific adaptation. Researchers have extended TPB by incorporating context-relevant constructs such as perceived risk, environmental concern, and technological readiness (Liobikienė et al., 2021; Sang & Bekhet, 2021). This study

extends TPB by integrating Brand Trust, Product Quality, and Perceived Value as critical determinants in the high-involvement, technology-intensive NEV purchase decision.

Brand trust is defined as the consumer's confident belief that the brand will fulfill its promised value and act in the consumer's best interest. In technology-intensive products, brand trust mitigates perceived risks associated with performance uncertainty, technological complexity, and post-purchase support (Yadav & Pathak, 2017; Chinomona, 2020). For NEVs, brand trust assumes heightened importance due to battery technology uncertainty, charging infrastructure dependence, resale value concerns, and after-sales service requirements (Wu et al., 2019; Asadi et al., 2020).

BYD's vertical integration strategy, transparent communication about Blade Battery safety, and extensive dealership network contribute to building brand trust. Recent studies indicate that Chinese consumers prioritize brand trust in NEV purchases more heavily than in conventional vehicle purchases due to perceived technological risks (Ullah et al., 2021; Kim et al., 2022). Jain et al. (2021) found that brand trust significantly influences green vehicle adoption, particularly in emerging markets where technological familiarity is lower.

Product quality encompasses the totality of features and characteristics that bear on a product's ability to satisfy stated or implied needs. In the NEV context, product quality manifests through battery range, acceleration performance, intelligent features, build quality, and safety ratings (She et al., 2021; Danielis et al., 2020). BYD's Blade Battery technology represents a quality breakthrough, offering enhanced safety through lithium iron phosphate chemistry, improved energy density, and thermal stability (Lin et al., 2020).

Empirical evidence suggests that perceived product quality significantly influences purchase intentions, particularly in high-involvement product categories where quality cues reduce perceived risk (Huang et al., 2021; Xu et al., 2020). Berkeley et al. (2019) demonstrated that battery technology perception strongly predicts NEV adoption, while Kumar and Alok (2020) emphasized vehicle performance attributes as primary decision criteria. Liu et al. (2023) found that quality perception mediates the relationship between technological features and purchase intention in the Chinese NEV market.

Perceived value represents the consumer's overall assessment of a product's utility based on perceptions of what is received versus what is given. In the post-subsidy NEV market, perceived value becomes critical as consumers conduct sophisticated cost-benefit analyses encompassing purchase price, operating costs, environmental benefits, and social status (Tan et al., 2023; Yao et al., 2019). Schmalfuß et al. (2019) conceptualized perceived value in electric vehicles as multidimensional, including functional, emotional, and epistemic dimensions.

BYD's value proposition combines competitive pricing, low operating costs, government license plate advantages, and environmental credentials. The total cost of ownership calculation favors NEVs in China's regulatory environment (Wang et al., 2020). She et al. (2022) demonstrated that perceived value mediates between product attributes and purchase intention, serving as a cognitive summary construct. Tarei et al. (2021) found that value perception significantly

influences adoption in price-sensitive markets, while Zhou et al. (2023) highlighted the importance of perceived value in the post-subsidy Chinese NEV market.

Previous research has examined NEV adoption through various theoretical lenses. Wang et al. (2018) investigated the impact of environmental concern and perceived risk on NEV purchase intention in Beijing, finding significant effects but limited generalizability to Tier 2 cities. Li et al. (2020) explored the role of government policies and infrastructure readiness in NEV adoption, identifying critical barriers but not addressing brand-specific factors. Zhang and Bai (2021) examined consumer attitudes toward Chinese versus foreign NEV brands, revealing preference shifts toward domestic brands among younger consumers.

However, existing research exhibits three limitations. First, geographic concentration in Tier 1 cities limits understanding of Tier 2 city dynamics where income levels, infrastructure, and consumer sophistication differ. Second, the post-subsidy era (2023 onwards) presents fundamentally different consumer decision-making contexts requiring updated investigation. Third, brand-specific studies remain scarce despite significant performance variations across NEV manufacturers.

This study's novelty lies in: (1) focusing on Changzhou, a representative Tier 2 industrial city; (2) examining the post-subsidy market context where intrinsic product attributes dominate; (3) integrating TPB with brand trust, quality, and value constructs specific to BYD; and (4) providing actionable insights for regional market strategies. The research contributes to both theoretical understanding of NEV adoption mechanisms and practical knowledge for manufacturers targeting Tier 2 urban clusters.

H1: Brand Trust has a significant positive influence on Purchase Intention of BYD NEVs in Changzhou

Brand trust reduces perceived risk and uncertainty in technology-intensive purchases. BYD's reputation for battery safety, extensive after-sales network, and transparent communication build consumer confidence. Trust in the brand signal's reliability, reducing cognitive dissonance and facilitating purchase decisions.

H2: Product Quality has a significant positive influence on Purchase Intention of BYD NEVs in Changzhou

Product quality serves as a primary decision criterion in high-involvement purchases. BYD's Blade Battery technology, intelligent features, and build quality differentiate the brand from competitors. Superior perceived quality justifies the investment and reduces post-purchase regret risk.

H3: Perceived Value has a significant positive influence on Purchase Intention of BYD NEVs in Changzhou

In the post-subsidy era, consumers engage in detailed cost-benefit analyses. BYD's competitive pricing, low operating costs, and environmental benefits create favorable value perceptions. When consumers perceive superior value balancing quality against price purchase intention strengthens.

H4: Brand Trust, Product Quality, and Perceived Value simultaneously have a significant positive influence on Purchase Intention of BYD NEVs in Changzhou

These three constructs operate synergistically rather than in isolation. Trust enables quality assessment, quality justifies value perception, and value facilitates intention formation. Their simultaneous effect captures the holistic nature of consumer decision-making in NEV purchases.

RESEARCH METHOD

Research Design

This research employed a quantitative research design utilizing a cross-sectional survey approach. The positivist paradigm guides the research, emphasizing objective measurement, statistical analysis, and hypothesis testing. The research design is descriptive-explanatory, aiming to describe variable distributions and explain causal relationships between independent variables (Brand Trust, Product Quality, Perceived Value) and the dependent variable (Purchase Intention).

Population and Sample

The research population comprises residents of Changzhou City who are potential BYD NEV consumers, defined as individuals aged 25-55, holding valid driver's licenses, with household income above RMB 100,000 annually, and demonstrating awareness of BYD NEV products. Given the large population size, purposive sampling was employed to select 200 respondents meeting the specified criteria. Sample size determination followed Hair et al.'s (2010) recommendation of minimum 5:1 ratio of observations to variables.

Data Analysis

Data analysis employed SPSS version 25.0, proceeding through several stages: (1) Descriptive statistics to profile respondent demographics; (2) Validity testing using Pearson correlation; (3) Reliability testing using Cronbach's Alpha; (4) Classical assumption tests including normality, heteroscedasticity, and multicollinearity; and (5) Multiple linear regression analysis to test hypotheses. The regression model specification was: $PI = \alpha + \beta_1 BT + \beta_2 PQ + \beta_3 PV + \epsilon$.

RESULTS AND DISCUSSION

Respondent Characteristics

The demographic profile of 200 respondents reveals important characteristics of potential BYD NEV consumers in Changzhou. Gender distribution shows 58.5% male (117 respondents) and 41.5% female (83 respondents), reflecting typical patterns in automotive purchase decision-making where males often take primary roles, though female participation is substantial. This gender distribution aligns with findings from Huang et al. (2021) regarding Chinese NEV early adopters.

Age distribution demonstrates concentration in economically active segments: 25-35 years (42%, n=84), 36-45 years (36%, n=72), and 46-55 years (22%, n=44). The predominance of younger age groups (78% under 45) indicates that NEV adoption in Changzhou follows patterns observed in Tier 1 cities, where younger, tech-savvy consumers lead adoption (Tu & Yang, 2019).

This demographic composition suggests significant future market potential as these consumers enter peak earning years.

Educational attainment reveals a highly educated sample: bachelor's degree holders (54%, n=108), master's degree holders (23%, n=46), and diploma holders (23%, n=46). This educational profile exceeds general population statistics for Tier 2 cities, confirming that NEV adoption correlates with higher education levels. Higher education typically associates with greater environmental awareness, technological acceptance, and financial capacity all critical for NEV adoption (Jain et al., 2021).

Income distribution shows 38% earning RMB 100,000-200,000 annually (n=76), 35% earning RMB 200,001-300,000 (n=70), and 27% above RMB 300,000 (n=54). This income stratification indicates that BYD NEVs appeal across middle-to-upper income segments in Changzhou. The substantial proportion (62%) earning above RMB 200,000 suggests sufficient purchasing power for NEVs priced between RMB 150,000-250,000, BYD's primary price range. This income distribution reflects Changzhou's economic development as an industrial hub with substantial middle-class expansion.

Descriptive Statistics Analysis

Table 1. Descriptive Statistics of Research Variables

Variable	Mean	Std. Dev	Min	Max
Brand Trust	3.89	0.68	2.20	5.00
Product Quality	4.12	0.61	2.60	5.00
Perceived Value	3.95	0.72	2.40	5.00
Purchase Intention	3.78	0.75	2.00	5.00

Source: Survey data analyzed using SPSS version 25.0

Table 1 presents descriptive statistics for all research variables. Product Quality received the highest mean score (M=4.12, SD=0.61), indicating strong positive perceptions of BYD's product attributes among Changzhou consumers. This high rating reflects BYD's successful communication of Blade Battery technology, intelligent features, and build quality improvements. The relatively low standard deviation (0.61) suggests consensus among respondents regarding BYD's product quality, which is favorable for market positioning.

Perceived Value achieved the second-highest mean (M=3.95, SD=0.72), indicating favorable cost-benefit assessments. This suggests Changzhou consumers recognize BYD's value proposition combining competitive pricing, low operating costs, and environmental benefits. The slightly higher standard deviation (0.72) compared to Product Quality indicates more variability in value perceptions, likely reflecting diverse income levels and usage patterns among respondents.

Brand Trust scored moderately (M=3.89, SD=0.68), suggesting room for improvement in building consumer confidence. While approaching the "agree" threshold (4.0), this score indicates that BYD faces ongoing challenges in establishing complete trust among Tier 2 city consumers. The moderate standard deviation suggests varied trust levels, potentially reflecting differences in prior exposure to the brand, information availability, or personal risk tolerance.

Purchase Intention registered the lowest mean ($M=3.78$, $SD=0.75$), though still in the positive range. This gap between positive product perceptions and lower purchase intention suggests the existence of barriers beyond the variables examined potentially including charging infrastructure concerns, financing constraints, or intention-behavior gaps typical in high-involvement purchases. The highest standard deviation (0.75) indicates substantial heterogeneity in purchase readiness, reflecting the complex decision-making process for NEV adoption.

Validity and Reliability Testing

Validity testing employed Pearson Product-Moment Correlation to assess convergent validity of measurement items. All items demonstrated correlation coefficients exceeding 0.3 with their respective construct totals, confirming adequate validity. For Brand Trust, item correlations ranged from $r=0.647$ to $r=0.789$ (all $p<0.01$). Product Quality items showed correlations from $r=0.698$ to $r=0.843$ (all $p<0.01$). Perceived Value items achieved correlations between $r=0.612$ and $r=0.764$ (all $p<0.01$). Purchase Intention items demonstrated correlations ranging from $r=0.671$ to $r=0.801$ (all $p<0.01$).

These correlation values substantially exceed the minimum threshold ($r>0.3$), indicating that items effectively measure their intended constructs. The consistently high correlations across all constructs validate the measurement instrument's convergent validity, confirming that items within each scale measure the same underlying construct (Hair et al., 2010). Reliability testing using Cronbach's Alpha yielded: Brand Trust ($\alpha=0.847$), Product Quality ($\alpha=0.876$), Perceived Value ($\alpha=0.821$), and Purchase Intention ($\alpha=0.859$). All alpha values exceed the acceptable threshold of 0.7, with several approaching the 0.9 threshold indicative of excellent reliability. These results confirm internal consistency reliability, demonstrating that items within each scale produce stable and consistent measurements.

Classical Assumption Tests

Table 2. Classical Assumption Test Results

Test Type	Result	Conclusion
Normality (K-S)	Sig. = 0.087	Normal Distribution
Heteroscedasticity (Glejser)	All Sig. > 0.05	Homoscedastic
Multicollinearity (VIF)	VIF: 1.87 - 2.34	No Multicollinearity

Source: Results of classical assumption tests conducted using SPSS version 25.0 (2026).

Classical assumption tests validate the appropriateness of multiple linear regression analysis. The Kolmogorov-Smirnov normality test yielded asymptotic significance of 0.087 ($p>0.05$), confirming that residuals follow normal distribution. This satisfies the normality assumption critical for parametric statistical inference. Normal distribution of residuals ensures that parameter estimates are unbiased and efficient, and that significance tests produce valid conclusions. Heteroscedasticity testing via Glejser test revealed significance values exceeding 0.05 for all independent variables: Brand Trust (Sig.=0.156), Product Quality (Sig.=0.287), and Perceived Value (Sig.=0.213). These results indicate homoscedastic residuals constant error variance across

predictor levels. Homoscedasticity ensures that regression coefficient standard errors are correctly estimated, validating hypothesis test results and confidence intervals.

Multicollinearity assessment yielded Variance Inflation Factor (VIF) values well below the problematic threshold of 10: Brand Trust (VIF=1.87, Tolerance=0.535), Product Quality (VIF=2.34, Tolerance=0.427), and Perceived Value (VIF=2.12, Tolerance=0.472). All tolerance values exceed 0.1, further confirming absence of multicollinearity. These results demonstrate that independent variables measure distinct constructs without problematic overlap, ensuring that regression coefficients reflect true individual effects rather than confounded relationships. The satisfaction of all classical assumptions validates the application of multiple linear regression and ensures the reliability of subsequent hypothesis testing.

Hypothesis Testing Results

Table 3. Multiple Linear Regression Analysis Results

Variable	B	Std. Error	Beta (β)	t	Sig.
(Constant)	0.187	0.234	-	0.799	0.425
Brand Trust	0.272	0.074	0.246	3.687	0.000
Product Quality	0.478	0.081	0.389	5.923	0.000
Perceived Value	0.310	0.070	0.298	4.412	0.000

Source: Multiple linear regression analysis results from SPSS version 25.0 (2026)

$$F = 87.324, \text{Sig.} = 0.000; R^2 = 0.671, \text{Adjusted } R^2 = 0.665$$

Multiple linear regression analysis produced the equation: $PI = 0.187 + 0.246BT + 0.389PQ + 0.298PV$. The constant term (0.187) represents baseline purchase intention when all predictor variables equal zero, though this theoretical scenario lacks practical meaning given the scale ranges.

H1 Testing: Brand Trust → Purchase Intention. Brand Trust demonstrates significant positive influence on Purchase Intention ($\beta=0.246$, $t=3.687$, $p=0.000<0.05$). The standardized coefficient indicates that a one-unit increase in Brand Trust leads to a 0.246 unit increase in Purchase Intention, controlling for other variables. With t-value (3.687) substantially exceeding the critical value (1.96 for $\alpha=0.05$, two-tailed), and p-value approaching zero, we reject the null hypothesis and confirm H1. This finding validates that BYD's brand credibility, reliability perceptions, and consumer confidence significantly drive purchase intentions in Changzhou. The magnitude (0.246) suggests moderate but meaningful impact, indicating brand trust operates as an important but not dominant factor in NEV purchase decisions.

H2 Testing: Product Quality → Purchase Intention. Product Quality exhibits the strongest significant positive influence on Purchase Intention ($\beta=0.389$, $t=5.923$, $p=0.000<0.05$). The coefficient magnitude (0.389) surpasses both Brand Trust and Perceived Value, establishing Product Quality as the primary predictor of purchase intention. A one-unit increase in Product Quality perception yields a 0.389 unit increase in Purchase Intention. The exceptionally high t-value (5.923) and zero p-value provide overwhelming evidence for rejecting the null hypothesis,

strongly confirming H2. This finding underscores that BYD's Blade Battery technology, intelligent features, vehicle range, and build quality serve as the most critical determinants of consumer adoption decisions. In the post-subsidy era, where government incentives no longer mask quality differences, product attributes emerge as the decisive competitive advantage.

H3 Testing: Perceived Value → Purchase Intention. Perceived Value shows significant positive influence on Purchase Intention ($\beta=0.298$, $t=4.412$, $p=0.000<0.05$). The standardized coefficient (0.298) positions Perceived Value between Product Quality and Brand Trust in terms of effect magnitude. A one-unit increase in Perceived Value produces a 0.298 unit increase in Purchase Intention. The substantial t-value (4.412) and zero p-value lead to rejection of the null hypothesis, confirming H3. This validates that consumers' cost-benefit analyses encompassing purchase price, operating costs, environmental benefits, and social value significantly influence adoption decisions. The coefficient magnitude suggests strong practical significance, reflecting the importance of total cost of ownership considerations in NEV purchases, particularly for middle-class consumers in Tier 2 cities where price sensitivity exceeds that of Tier 1 metropolitan areas.

H4 Testing: Simultaneous Effect. The F-test reveals that Brand Trust, Product Quality, and Perceived Value simultaneously exert significant influence on Purchase Intention ($F=87.324$, $p=0.000<0.05$). The F-statistic substantially exceeds the critical value, and p-value approaches zero, leading to rejection of the null hypothesis and confirmation of H4. The coefficient of determination ($R^2=0.671$, Adjusted $R^2=0.665$) indicates that the three independent variables collectively explain 67.1% of variance in Purchase Intention. The minimal difference between R^2 and Adjusted R^2 (0.006) suggests model parsimony the variables included genuinely contribute to explanatory power without overfitting. The substantial R^2 demonstrates robust model fit, indicating that Brand Trust, Product Quality, and Perceived Value capture the primary psychological mechanisms driving NEV adoption in Changzhou. The remaining 32.9% unexplained variance likely reflects factors beyond this study's scope: charging infrastructure availability, social influence, environmental consciousness, individual innovativeness, and financing accessibility.

Brand Trust as Risk Mitigation Mechanism

The significant positive influence of Brand Trust on Purchase Intention ($\beta=0.246$, $p<0.05$) validates its critical role as a psychological mechanism for managing perceived risks in NEV adoption. This finding aligns with the technology acceptance literature emphasizing trust's function in mitigating uncertainties associated with complex, high-involvement technology products (Chinomona, 2020; Yadav & Pathak, 2017). In Changzhou's context, where consumers face substantial information asymmetry regarding battery longevity, charging infrastructure reliability, resale values, and long-term maintenance costs, brand trust operates as a cognitive heuristic that simplifies complex decision-making.

The coefficient magnitude (0.246), while significant, positions Brand Trust as a supporting rather than primary determinant of purchase intention. This moderate effect size suggests that while trust facilitates adoption, it alone cannot drive purchase decisions absent satisfactory product

quality and value perceptions. This pattern reflects the maturation of China's NEV market: early adoption phases emphasized brand reputation and government endorsements due to product uncertainties, but current consumers, benefiting from five years of market development, increasingly demand tangible evidence of product superiority beyond brand promises (Liu et al., 2023).

BYD's brand trust advantages in Changzhou stem from multiple sources. First, vertical integration from battery cells to complete vehicles signals quality control capabilities, reducing perceived manufacturing risks. Second, transparent communication regarding Blade Battery safety including public demonstrations of nail penetration tests builds confidence in technological reliability. Third, extensive dealership networks in Tier 2 cities provide tangible evidence of post-purchase support commitment, addressing service accessibility concerns. Fourth, BYD's positioning as China's leading NEV manufacturer leverages domestic brand preference trends among patriotic consumers who view supporting Chinese technology firms as socially desirable (Zhang & Bai, 2021).

However, the moderate coefficient also reveals trust limitations. Tier 2 city consumers demonstrate greater skepticism than Tier 1 counterparts, possibly reflecting: (1) less direct exposure to NEVs through test drives or peer ownership, necessitating greater reliance on secondhand information susceptible to credibility concerns; (2) lower technological literacy making battery technology claims difficult to verify independently; (3) traditional automotive brand loyalty (Toyota, Volkswagen) creating switching barriers; and (4) infrastructure gaps making brand promises of convenience less credible.

The findings support previous research by Ullah et al. (2021) and Kim et al. (2022) demonstrating trust's significance in NEV adoption while extending understanding to Tier 2 contexts. The moderate effect size suggests that trust-building initiatives, while necessary, require complementary strategies focusing on product quality demonstration and value communication to effectively drive adoption in markets characterized by informed, pragmatic consumers.

Product Quality as Primary Adoption Driver

Product Quality emerges as the strongest predictor of Purchase Intention ($\beta=0.389$, $p<0.05$), confirming its primacy as the decisive factor in NEV adoption decisions. This finding resonates with consumer behavior theory emphasizing quality's role in justifying significant financial commitments in high-involvement product categories (Huang et al., 2021; Berkeley et al., 2019). The coefficient magnitude exceeding both Brand Trust (0.246) and Perceived Value (0.298) establishes that tangible product attributes outweigh subjective brand evaluations and calculated economic benefits in driving purchase intentions among Changzhou consumers.

This quality primacy reflects fundamental shifts in China's NEV market dynamics. In the subsidy-dependent era (2015-2022), government incentives masked quality differences, enabling inferior products to achieve sales through price advantages. The post-subsidy environment (2023 onwards) removes this distortion, compelling consumers to evaluate vehicles based on intrinsic merit. BYD's strong quality positioning evidenced by the highest mean score ($M=4.12$) and lowest

standard deviation (SD=0.61) among all variables demonstrates successful adaptation to this new competitive reality.

BYD's product quality advantages manifest across multiple dimensions critical to NEV adoption. The Blade Battery represents a technological breakthrough addressing the primary barrier to NEV adoption: range anxiety. Unlike conventional lithium-ion batteries prone to thermal runaway, the lithium iron phosphate chemistry in Blade Batteries offers superior thermal stability, reducing fire risks that dominate consumer safety concerns (Lin et al., 2020). The cell-to-pack design increases volumetric energy density by 50% compared to traditional battery packs, enabling competitive range (400-600km) matching consumer expectations established by conventional vehicles.

Performance characteristics increasingly rival premium conventional vehicles: 0-100km/h acceleration in 3.9-7.9 seconds (model-dependent), responsive handling through low center of gravity from floor-mounted batteries, and near-silent operation enhancing perceived luxury. These performance attributes address the misconception that NEVs involve performance compromises, particularly important for male consumers (58.5% of sample) who prioritize driving dynamics.

Intelligent features differentiate BYD from competitors and align with young consumers' (78% under 45) technological expectations. The DiLink intelligent connectivity system integrates smartphone mirroring, over-the-air software updates, voice control, and advanced driver assistance systems (ADAS) including adaptive cruise control, lane keeping assistance, and automated parking. These features transform vehicles from transportation tools into connected digital platforms, appealing to tech-savvy consumers familiar with smartphone ecosystems.

Build quality improvements in recent models address previous weaknesses relative to foreign brands. Interior materials have been upgraded from hard plastics to soft-touch surfaces, stitching quality enhanced, and panel gaps reduced. These tangible quality improvements signal BYD's commitment to competing on total product merit rather than price alone, crucial for premium positioning in Tier 2 markets where consumers aspire to Tier 1 consumption patterns.

The strong quality effect ($\beta=0.389$) reflects Changzhou's specific context as an industrial city where consumers possess manufacturing expertise enabling sophisticated quality assessment. Many respondents likely work in automotive supply chains, precision machinery, or related sectors, equipping them with technical knowledge to evaluate battery technology claims, motor efficiency, and build quality. This technical literacy makes quality the most salient decision criterion, as these consumers can independently verify manufacturer claims rather than relying primarily on brand reputation.

The finding extends literature by Liu et al. (2023) and She et al. (2021) while providing brand-specific evidence of quality's decisive role. The coefficient magnitude suggests that quality improvements yield the highest return on investment for manufacturers targeting Tier 2 markets. Even modest quality enhancements improved materials, better software interfaces, extended range should translate directly into stronger purchase intentions, whereas comparable investments in brand building or price reductions might generate lower returns given quality's dominant position.

Perceived Value in Post-Subsidy Context

Perceived Value significantly influences Purchase Intention ($\beta=0.298$, $p<0.05$), reflecting consumers' sophisticated cost-benefit analysis in NEV evaluation. The coefficient magnitude substantial yet below Product Quality indicates that value perceptions strongly influence decisions while operating through cognitive processes distinct from tangible quality assessment. This finding aligns with value theory (Zeithaml, 1988) while extending understanding to the post-subsidy NEV market where economic calculations assume heightened importance absent government incentives (Zhou et al., 2023; Tarei et al., 2021).

BYD's value proposition operates across multiple dimensions creating favorable perceptions. The initial purchase price, while higher than comparable conventional vehicles (premium of RMB 30,000-50,000), positions competitively within the NEV segment. BYD's economies of scale from vertical integration enable pricing 15-20% below foreign competitors (Tesla, BMW) with comparable specifications, appealing to value-conscious Tier 2 consumers whose income levels (62% earning RMB 200,000-300,000+) permit NEV consideration but favor efficient expenditure.

Operating cost advantages strongly enhance value perceptions. Electricity costs in Changzhou average RMB 0.60/kWh for residential charging, yielding approximately RMB 0.10/km operating costs compared to RMB 0.50/km for gasoline vehicles (assuming RMB 7.5/liter petrol, 15L/100km consumption). For typical annual mileage (15,000km), this generates savings of RMB 6,000 annually, or RMB 30,000 over a five-year ownership period. These savings partially offset the purchase price premium, making total cost of ownership calculations favor NEVs.

Maintenance advantages further enhance value. NEVs eliminate engine oil changes, transmission servicing, spark plug replacements, and exhaust system maintenance reducing five-year maintenance costs by approximately RMB 8,000-12,000 compared to conventional vehicles. Simpler powertrains with fewer moving parts reduce breakdown probabilities, particularly valuable for consumers prioritizing reliability. These maintenance benefits appeal especially to working professionals (42% aged 25-35) managing time constraints alongside cost considerations.

Policy benefits add value beyond direct costs. In Chinese cities implementing license plate restrictions to manage congestion, NEVs receive preferential treatment: immediate plate issuance versus auctions costing RMB 80,000-90,000 (Shanghai) or lotteries with low winning probabilities (Beijing). While Changzhou currently lacks such restrictions, anticipated future implementation increases NEV value for forward-looking consumers. Additionally, NEVs receive parking fee discounts at many facilities and access to bus lanes in some cities, providing convenience value difficult to monetize but tangibly appreciated.

Environmental value contributes meaningfully, particularly for educated consumers (77% holding bachelor's degrees or higher). NEVs enable environmentally conscious individuals to align consumption with environmental values, generating psychological satisfaction beyond monetary calculations. This value dimension particularly resonates with younger consumers (42% aged 25-35) demonstrating higher environmental consciousness than older generations. The social signaling value of NEV ownership communicating technological sophistication, environmental

responsibility, and economic success adds further non-monetary value appreciated in image-conscious Tier 2 cities aspiring to Tier 1 status.

However, the coefficient magnitude (0.298), while substantial, reveals value perception limitations. Infrastructure gaps in Tier 2 cities constrain value realization: limited public charging networks increase range anxiety, requiring home charging capability that excludes apartment residents without dedicated parking. Longer charging times compared to refueling impose convenience costs difficult to offset through operating savings for time-sensitive professionals. Resale value uncertainty given the nascent used NEV market creates financial risk that conservative consumers factor negatively into value calculations.

The finding supports She et al. (2022) and Wang et al. (2020) regarding value's mediating role while highlighting post-subsidy context importance. The substantial coefficient suggests that value-focused marketing emphasizing total cost of ownership through concrete calculations, environmental benefits, and policy advantages effectively drives adoption. The effect size implies that even modest price reductions or operating cost improvements translate meaningfully into purchase intentions, though remaining secondary to quality as the primary decision driver.

Synergistic Effects and Model Implications

The substantial R^2 (0.671) and significant F-statistic (87.324, $p < 0.05$) demonstrate that Brand Trust, Product Quality, and Perceived Value collectively capture the primary psychological mechanisms driving NEV purchase intentions in Changzhou. This robust explanatory power validates the theoretical framework integrating TPB with domain-specific constructs, confirming that consumer decision-making synthesizes cognitive evaluations across trust, quality, and value dimensions rather than relying on single factors.

The relative coefficient magnitudes (Quality: 0.389 > Value: 0.298 > Trust: 0.246) reveal a decision-making hierarchy: consumers prioritize tangible product attributes, secondarily consider economic calculations, and finally reference brand reputation for risk mitigation. This pattern suggests Changzhou consumers adopt pragmatic, evidence-based approaches rather than emotion-driven or brand-loyal patterns. The hierarchy reflects market maturation: sufficient information availability enables quality assessment, competitive pressure forces value consciousness, and trust operates as a supplementary decision heuristic rather than primary driver.

The synergistic nature of these effects suggests multiplicative rather than merely additive relationships. Strong quality perceptions enhance value assessments by justifying premium pricing and building confidence in long-term reliability that improves total cost of ownership calculations. Quality also reinforces trust by providing tangible evidence supporting brand promises, transforming abstract trust into verified reliability. Similarly, favorable value perceptions amplify quality importance: when economic benefits justify the investment, consumers scrutinize quality more intensely to ensure value realization. Trust facilitates both quality acceptance (trusted brands receive benefit of doubt regarding claimed specifications) and value recognition (trust reduces perceived risk, making future benefits more credible in present calculations).

The unexplained variance (32.9%) indicates factors beyond this study's scope influencing adoption. Infrastructure availability public charging station density, home charging capability, service center proximity likely explains substantial variance, particularly in Tier 2 cities where infrastructure lags Tier 1 counterparts. Social influence from peers, family, and opinion leaders shapes adoption through informational social influence (learning from others' experiences) and normative social influence (conforming to social expectations). Environmental consciousness and personal values regarding sustainability contribute, especially among educated consumers. Individual difference variables technological innovativeness, risk propensity, driving patterns create heterogeneity in adoption readiness. Financial factors including liquidity constraints, financing availability, and opportunity costs of capital allocation affect purchase timing even when intentions exist.

Theoretical and Practical Implications

Theoretically, this research advances TPB application in technology adoption contexts by demonstrating successful integration with domain-specific constructs. The framework extension incorporating Brand Trust, Product Quality, and Perceived Value alongside TPB's core components provides a comprehensive model for high-involvement technology products where traditional TPB elements alone prove insufficient. The robust explanatory power ($R^2=0.671$) validates this extended framework, suggesting its applicability beyond NEVs to other technology-intensive consumer durables: home solar systems, smart home ecosystems, or emerging technologies like hydrogen vehicles.

The finding that Product Quality dominates Brand Trust challenges conventional wisdom in Chinese consumer behavior emphasizing brand loyalty and face considerations. This quality primacy suggests market maturation toward rational, attribute-based evaluation, potentially reflecting broader societal shifts toward pragmatism and away from superficial status consumption. The pattern may characterize Tier 2 cities generally where aspirational consumption combines with value consciousness rather than being BYD-specific or NEV-specific.

Managerially, the findings suggest clear strategic priorities for NEV manufacturers targeting Tier 2 markets. First and most importantly, continuous product quality improvement deserves primary resource allocation. Investments in battery technology advancement, range extension, charging speed improvement, intelligent feature development, and build quality refinement yield the highest returns in purchase intention enhancement. Marketing should emphasize tangible quality attributes through test drives, transparent technical specifications, and third-party validation rather than abstract brand promises.

Second, value communication requires sophisticated total cost of ownership calculators enabling consumers to conduct personalized analyses incorporating their specific usage patterns, local electricity rates, and financing options. Marketing materials should present concrete savings calculations, maintenance comparisons, and policy benefit summaries rather than general value claims. Financing products reducing upfront costs while preserving total cost advantages would

address the intention-behavior gap where financial constraints prevent purchase despite positive intentions.

Third, brand trust building demands consistent after-sales service delivery, transparent communication about product capabilities and limitations, extended warranties addressing longevity concerns, and local community engagement building familiarity. Service network density in Tier 2 cities should match Tier 1 levels to provide equivalent post-purchase reassurance. User testimonials from local Changzhou residents would prove more credible than celebrity endorsements or Tier 1 city case studies given social distance considerations.

Fourth, infrastructure development represents a critical enabler despite falling outside the current model. Manufacturers should collaborate with municipal governments, real estate developers, and retail establishments to expand charging networks, reducing range anxiety and enhancing practical value. Public-private partnerships financing charging infrastructure could accelerate adoption by addressing the primary non-product barrier to purchase intention conversion.

CONCLUSION

This research confirms that Brand Trust ($\beta=0.246$, $p<0.05$), Product Quality ($\beta=0.389$, $p<0.05$), and Perceived Value ($\beta=0.298$, $p<0.05$) significantly influence Purchase Intention toward BYD NEVs in Changzhou. Product Quality emerges as the primary driver, followed by Perceived Value and Brand Trust, reflecting pragmatic, evidence-based consumer decision-making in the post-subsidy era. Collectively, these variables explain 67.1% of variance ($R^2=0.671$, $F=87.324$, $p<0.05$), demonstrating substantial predictive power and validating the extended TPB framework for high-involvement technology products. Based on these findings, several recommendations are proposed. BYD should prioritize product quality improvement, emphasize tangible quality attributes in marketing, enhance value communication through cost-benefit demonstrations, and strengthen brand trust through consistent after-sales service. Policymakers should accelerate charging infrastructure development and provide targeted incentives for NEV adoption. Future research should expand to multiple Tier 2 cities, incorporate additional variables, and employ longitudinal or mixed-method approaches.

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