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WHAT DRIVES WATCH PURCHASE INTENTIONS? UTILITARIAN VS. SYMBOLIC MOTIVES IN SMART VS. TRADITIONAL TIMEPIECES: A TPB STUDY IN SHENZHEN

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ABSTRACT

This research investigates the divergent psychological drivers governing the purchase of smartwatches and traditional watches within the highly digitized yet culturally deep-rooted urban context of Shenzhen. Utilizing an extended Theory of Planned Behavior (TPB) framework, we employed a parallel measurement design to survey 402 consumers. Data were analyzed using Confirmatory Factor Analysis (CFA) and Structural Equation Modeling (SEM), incorporating rigorous cross-context measurement invariance tests. The results uncover a distinct construct asymmetry: Attitude (ATT) emerges as the dominant predictor for smartwatch intentions, delineating a rational–utilitarian pathway driven by functional utility and ecosystem integration. Conversely, Subjective Norm (SN) dominates traditional watch intentions, revealing a normative–symbolic pathway tethered to status signaling and ceremonial relevance. Perceived Behavioral Control (PBC) remains a consistent, stabilizing predictor across both categories. The study's theoretical novelty lies in its dual–product comparative modeling, empirically demonstrating that consumer motivation is not static but value–contingent. Managerially, these findings suggest that while smartwatches require outcome–based positioning, traditional timepieces must reinforce heritage–anchored storytelling.

KEYWORDS: Smartwatches; Traditional Watches; Theory of Planned Behavior (TPB); Comparative SEM; Measurement Invariance; Utilitarian vs. Symbolic Motivation

1. INTRODUCTION

1.1 Research Background

"That's a fine timepiece—what movement is inside?" "Actually, it's a smartwatch. It tracks my sleep and payments—it's just more practical."

This increasingly common exchange encapsulates a fundamental reconfiguration of value in the contemporary wristwear market. For the modern urban consumer, the wrist has become a contested space between two distinct value logics: the measurable utility of the smartwatch, and the symbolic craftsmanship of the traditional timepiece [1]. While both categories fulfill the elemental function of timekeeping, they mobilize vastly different psychological mechanisms.

In hyper-digitized metropolises like Shenzhen, smartwatches are typically evaluated through a rational–utilitarian lens, where perceived usefulness, health quantification, and ecosystem interoperability are paramount [2]. In contrast, traditional watches retain their relevance through a normative–symbolic lens, serving as markers of prestige, heritage, and appropriate attire for formal occasions [3].

Shenzhen offers a unique "petri dish" for this investigation. It is a city of paradoxes: it stands at the forefront of global digital innovation (enhancing the functional appeal of wearables) while simultaneously maintaining deep-seated cultural practices regarding professional display and gift-giving (sustaining the symbolic weight of traditional horology) [4]. Anchoring this comparison in the Theory of Planned Behavior (TPB) allows for a precise dissection of these mechanisms: we posit that Attitude (ATT) drives the utilitarian choice, whereas Subjective Norm (SN) drives the symbolic choice.

1.2 Research Problem and Objectives

While the TPB has been exhaustively applied to technology adoption, existing literature largely suffers from a "single-category myopia." Studies tend to model intention for a single product in isolation (e.g., adopting a smartwatch vs. not adopting) [5]. This approach fails to capture the competitive reality where consumers weigh two functionally similar but psychologically divergent options.

The core problem this study addresses is the lack of comparative empirical evidence. We do not yet fully understand how the weights of TPB's three predictors—ATT, SN, and PBC—shift when the same consumer evaluates a smartwatch versus a traditional watch. Consequently, our central research question is: How do ATT, SN, and PBC differentially shape purchase intentions for smartwatches and traditional watches within the same consumer population in Shenzhen?

To address this, we pursue four specific objectives:

(1) Estimate the effects of TPB predictors on purchase intention for each category using a parallel measurement design.
(2) Compare the relative strength of these predictors via comparative SEM using a within-respondent parallel measurement design to identify construct asymmetry.
(3) Contextualize these differences within Shenzhen's specific urban cultural–technological ecology.
(4) Translate findings into actionable segmentation strategies for retailers managing hybrid product portfolios.

1.3 Interpretive Lens: Utilitarian Lifestyle Orientation (ULO)

We introduce Utilitarian Lifestyle Orientation (ULO) not as a new latent variable, but as an interpretive lens. ULO describes the modern urban tendency to prioritize efficiency, data quantification, and seamless digital integration. We employ this concept to explain why Attitude (ATT) becomes the dominant force for smartwatches—consumers with a high ULO naturally weigh functional outcomes more heavily than social approval when choosing tech wearables. This lens helps clarify the motivational shift from social signaling to personal efficiency in the digital age.

1.4 Research Significance

This study bridges a critical gap in consumer behavior literature by shifting from a single-product adoption model to a dual-product competitive model.

(1) Theoretical Contribution. We demonstrate "value–contingent construct salience." TPB is not a rigid template; its pathways shift depending on whether the product is perceived as a tool (smartwatch → ATT dominant) or a totem (traditional watch → SN dominant).
(2) Methodological Contribution.By employing a parallel measurement design with strict invariance testing, we ensure that observed differences are psychological, not statistical artifacts.
(3) Contextual Contribution. The study embeds the analysis in the specific socio-technical context of Shenzhen, illustrating how digital infrastructure can amplify utilitarian motives while cultural norms preserve symbolic ones.
(4) Managerial Contribution. We provide a bifurcated playbook: "Outcome Framing" for smartwatches and "Heritage Storytelling" for traditional watches, helping brands navigate the hybrid retail landscape of modern China.

2. LITERATURE REVIEW

2.1 Theoretical Foundation: The Theory of Planned Behavior in a Dual-Value Context

To understand the divergent psychological mechanisms driving watch consumption, we anchor our analysis in the Theory of Planned Behavior (TPB). Originally conceptualized by Ajzen [6], TPB posits that human behavior is not impulsive but deliberative, stemming from three core antecedents: Attitude (ATT), Subjective Norm (SN), and Perceived Behavioral Control (PBC).

While TPB has been widely validated across domains ranging from sustainable consumption [7] to mobile payments [8], its application in comparative consumer research remains underdeveloped. Most studies utilize TPB to predict the adoption of a single product class. We argue, however, that the theory's true explanatory power in the current market lies in its ability to capture motivational asymmetry—that is, how the relative weights of ATT and SN shift when the object of consumption changes from a tool (smartwatch) to a symbol (traditional watch).

Attitude (The Rational Evaluation): In the context of smart wearables, attitude is primarily shaped by "perceived usefulness" and "instrumental value" [9]. It represents a utilitarian calculation: does this device enhance my efficiency or health?

Subjective Norm (The Social Pressure): For heritage goods, SN captures the "normative pressure" to conform to social expectations. As noted in luxury research, the consumption of traditional timepieces is often a response to professional etiquette and status signaling rather than intrinsic product utility [10].

Perceived Behavioral Control (The Enabler): This reflects the requisite resources (money, time, technical skill) to perform the behavior. In a digitally mature environment like Shenzhen, we hypothesize that PBC acts as a hygiene factor—necessary for purchase but not the primary differentiator between the two categories.

2.2 Divergent Consumption Logics: Utilitarian vs. Symbolic Pathways

The contemporary wristwear market is characterized by a "Great Divergence" in value propositions. Although smartwatches and traditional watches share a location on the body, they occupy distinct psychological spaces.

(1) The Smartwatch: The Quantified Self and Ecosystem Fit. Recent literature on wearable technology consistently frames adoption as a function of utility. Acikgoz et al. (2023) demonstrated that compatibility with a user's existing digital ecosystem (e.g., smartphone pairing) significantly amplifies positive attitudes [11]. Furthermore, health-focused reviews indicate that the value of smartwatches is increasingly derived from their ability to "monitor, nudge, and predict" biological states [12]. Thus, the consumption logic here is fundamentally rational–utilitarian: the device is judged by its output.

(2) The Traditional Watch: Heritage and Ceremonial Identity. In sharp contrast, the literature on luxury consumption suggests that traditional watches operate on a normative–symbolic logic. Kapferer and Bastien [13] argue that luxury goods are "social stratifiers." The value of a mechanical watch lies in its inefficiency—its craftsmanship and history serve as signals of taste and cultural capital. Kessous et al. (2017) further highlight the "ritualistic" dimension, finding that traditional watches are often purchased to mark milestones or fulfill intergenerational expectations [14]. Here, the decision is less about what the watch does (tell time) and more about what it says (status).

Table 1. Comparative Drivers of Purchase Intention: Smartwatches vs. Traditional Watches

Dimension	Smartwatches (Rational–Utilitarian Pathway)	Traditional Watches (Normative–Symbolic Pathway)
Primary Drivers	Functional utility, health metrics, ecosystem integration [9, 12]	Status signaling, brand heritage, cultural rituals [13, 14]
Dominant TPB Construct	Attitude (ATT)	Subjective Norm (SN)
Core Demographic	Gen Z; Tech-savvy; Health-conscious	Professionals (35+); Tradition-oriented
Brand Influence	Moderate; Technology brand equity	Strong; Luxury brand prestige
Cultural Sensitivity	Medium (Privacy concerns)	High (Mianzi/Face, Gift-giving)

2.3 The "Shenzhen" Variable: Where High-Tech Meets High-Context

This study is deliberately situated in Shenzhen, China, not merely as a convenient location, but as a critical theoretical boundary condition. Shenzhen represents a unique intersection of two powerful forces:

(1) Digital Hyper-Maturity: As China's "Silicon Valley," Shenzhen boasts a near-ubiquitous adoption of digital payments and IoT devices. This environment likely inflates the perceived utility (ATT) and ease of use (PBC) of smartwatches [15].

(2) High-Context Cultural Norms: Despite its modernity, the city retains deep-rooted Confucian practices regarding business hierarchy and gift-giving. In these formal interactions, the traditional watch remains a non-negotiable prop for "Face" (Mianzi) [16].

This duality makes Shenzhen the ideal laboratory to test our central thesis: that the same consumer can oscillate between a hyper-rational mindset for tech and a hyper-normative mindset for tradition.

2.4 Research Gap

Despite the rich literature on both technology adoption and luxury branding, four critical gaps remain:

Gap 1: The Single-Category Myopia. Most TPB studies analyze products in isolation (e.g., Table 2). Few designs force a direct comparison between competing

categories within the same respondent pool, obscuring how motivational weights shift.

Gap 2: Undefined Asymmetry. While we know distinct drivers exist, the statistical magnitude of the difference between ATT and SN across these categories has rarely been quantified using parallel measurement.

Gap 3: The Contextual Vacuum. Western-centric studies often overlook the specific "techno-cultural" dynamics of Asian megacities, where digital infrastructure and traditional norms co-evolve.

Gap 4: Lifestyle Interpretation. Existing models rarely use a lifestyle-orientation lens (e.g., utilitarian orientation) to *interpret* why TPB relationships shift across value logics; this study uses ULO as an interpretive frame rather than a tested moderator.

Table 2. Selected TPB Applications in Related Consumption Contexts

Domain	Exemplar Study	Dominant Construct(s)	Relevance to This Study
Wearable Tech	Choi & Kim (2021) [9]	ATT, PBC	Establishes the baseline that utility drives smartwatch adoption.
Tech Curiosity	Acikgoz et al. (2023) [11]	ATT	Confirms that compatibility strengthens the Attitude-Intention link.
Luxury Goods	Kessous et al. (2017) [14]	SN	Highlights the role of social approval in heritage consumption.
E-Commerce	Pavlou & Fygenson (2006) [10]	ATT, PBC	Shows how trust and utility shape digital adoption; parallels smartwatches.
Green Products	Yadav & Pathak (2016) [7]	ATT, SN	Demonstrates that SN rises when consumption is socially rewarded.

3. RESEARCH METHODOLOGY

3.1 Research Design

To empirically test the proposed construct asymmetry, this study employed a quantitative, cross-sectional survey design. Unlike standard TPB applications that evaluate a single product in isolation, we utilized a parallel measurement framework. This design required each respondent to evaluate both a smartwatch and a traditional watch using identical psychometric scales.

This within-subject approach offers two methodological advantages:

(1) Control of Heterogeneity. By keeping the respondent constant, we control for individual-level unobserved heterogeneity (e.g., optimism bias, response style), allowing us to attribute differences in path coefficients directly to the product category.

(2) Comparative Validity. It enables the use of rigorous measurement invariance testing—a prerequisite for comparing structural paths across contexts.

3.2 Context and Sampling Procedure

The study was conducted in Shenzhen, selected for its dual identity as a global technology hub and a stronghold of traditional business culture. Data were collected via a professional online survey platform between March and April 2024.

To mitigate the order effects inherent in within-subject designs (where the evaluation of the first product might bias the second), we implemented a randomization protocol: the presentation order of the "Smartwatch Module" and "Traditional Watch Module" was randomized for each participant [17].

Sampling Criteria:

(1) Population: Urban residents of Shenzhen aged 18 and above.

(2) Technique: Convenience sampling with a lottery incentive to ensure diverse participation.

(3) Sample Size: We received 427 responses. After a rigorous screening process (excluding incomplete surveys and "straight-lining" responses with SD < 0.5), 402 valid responses were retained. This yields a valid-case retention rate of 94.1% (402/427) and satisfies the sample-to-parameter ratio recommended for Structural Equation Modeling (SEM) [18].

3.3 Participant Characteristics

The final sample (N = 402) reflects a demographic profile consistent with Shenzhen's active consumer class: relatively young, highly educated, and affluent. As shown in Table 3, the gender distribution is balanced (51.7% male), and the majority (75.6%) fall within the prime consumption age of 26–50. Notably, 88.8% hold a university degree, ensuring a high level of comprehension for the survey items.

Table 3. Demographic Profile of Respondents (N = 402)

Variable	Category	Frequency	Percentage (%)
Gender	Male	208	51.7
	Female	194	48.3
Age Group	18–25	98	24.4
	26–35	176	43.8
	36–50	128	31.8
Education	Bachelor's degree	215	53.5
	Master's degree or above	142	35.3
	Others	45	11.2
Monthly Income	< RMB 8,000	102	25.4
	RMB 8,000–15,000	178	44.3
	> RMB 15,000	122	30.3
Occupation	Students	96	23.9
	Professionals	204	50.7
	Entrepreneurs/Others	102	25.4
Note: Percentages may not total 100% due to rounding.			

3.4 Instrumentation

The survey instrument was developed by adapting validated scales from existing literature to fit the specific context of wristwear. To ensure measurement equivalence, the wording for items was kept identical

across the two product modules, changing only the subject (e.g., "smartwatch" vs. "traditional watch").

All items were measured on a 7-point Likert scale (1 = Strongly Disagree; 7 = Strongly Agree). The English scales underwent a standard translation and back-translation process to ensure semantic accuracy in Chinese. A pilot test (n=25) confirmed that the items were unambiguous and culturally appropriate.

Table 4. Measurement Constructs, Definitions, and Sources

Construct	Operational Definition	Items	Key Sources
Attitude (ATT)	The individual's overall evaluative judgment (instrumental and affective) of purchasing the product.	3	Ajzen (1991) [6]; Kim et al. (2022) [5]
Subjective Norm (SN)	Perceived social pressure from significant others (family, colleagues) to perform the behavior.	3	Pavlou & Fygenson (2006) [10]; Zhou (2013) [8]
Perceived Behavioral Control (PBC)	Perceived ease or difficulty of purchase, reflecting self-efficacy and resource availability.	3	Ajzen (1991) [6]; Choi & Kim (2021) [9]
Purchase Intention (PI)	The self-reported likelihood of acquiring the product within the next six months.	3	Kim et al. (2022) [5]; Venkatesh et al. (2012) [19]

Note: Control variables included Age, Gender, Income, and Tech Proficiency.

3.5 Analytical Strategy

Data analysis followed a two-stage approach using SPSS 28.0 and AMOS 24.0, utilizing the Maximum Likelihood (ML) estimator.

Stage 1: Data Screening and Measurement Model.

Prior to analysis, we assessed multivariate normality using Mahalanobis distance ($p < 0.001$) and checked for Common Method Bias (CMB). Harman's single-factor test revealed that the first factor explained 32.6% of the variance—well below the 50% threshold—suggesting that CMB is not a pervasive issue [20]. Confirmatory Factor Analysis (CFA) was then conducted to verify reliability (α, CR) and validity (AVE, discriminant validity).

Only after establishing partial scalar invariance did we proceed to test the statistical significance of path differences ($\Delta\chi^2$ and critical ratios) between the smartwatch and traditional watch models.

Stage 2: Structural and Comparative Modeling.

To test the hypotheses, we first estimated the structural paths for each product category separately. Subsequently, we employed Multi-Group SEM (MG-SEM) techniques adapted for within-subject designs. We followed the invariance hierarchy proposed by Byrne et al. (1989) [21]:

Configural Invariance: Testing if the factor structure is consistent across contexts.

Metric Invariance: Constraining factor loadings to be equal.

Scalar Invariance: Constraining intercepts.

Only after establishing partial scalar invariance did we proceed to test the statistical significance of path differences ($\Delta\chi^2$ and Critical Ratios) between the smartwatch and traditional watch models.

3.6 Ethical Considerations

This study adhered to the Declaration of Helsinki. The protocol was reviewed and approved by the Ethical Committee of Lincoln University College. All participants provided digital informed consent, were assured of anonymity, and could withdraw at any stage without penalty.

4. RESEARCH RESULTS AND DISCUSSION

4.1 Descriptive Analysis of Constructs

Before engaging in structural modeling, we examined the central tendencies and dispersion of the four latent constructs across both product categories. As detailed in Table 5, the descriptive statistics reveal an immediate divergence in evaluation patterns that foreshadows our structural findings. Respondents reported significantly higher means for Attitude (ATT) and Perceived Behavioral Control (PBC) regarding smartwatches (M_{ATT}=5.86; M_{PBC}=5.72) compared to traditional watches (M_{ATT}=5.21; M_{PBC}=5.31). This suggests that the sample generally perceives smartwatches as more functionally beneficial and easier to justify. Conversely, Subjective Norm (SN) scores were higher for traditional watches (M_{SN}=5.63) than for smartwatches (M_{SN}=5.48), hinting at the stronger social pressure associated with traditional timepieces.

Table 5. Descriptive Statistics for TPB Constructs (N = 402)

Construct	Product Category	Mean	SD
ATT	Smartwatch	5.86	0.92
	Traditional Watch	5.21	1.05
SN	Smartwatch	5.48	1.01
	Traditional Watch	5.63	0.97
PBC	Smartwatch	5.72	0.88
	Traditional Watch	5.31	0.95
PI	Smartwatch	5.77	0.93
	Traditional Watch	5.36	0.98
Note: All items measured on a 7-point Likert scale.			

4.2 Measurement Model Evaluation

We employed Confirmatory Factor Analysis (CFA) to validate the psychometric properties of the instrument. The measurement model demonstrated a satisfactory fit for both product categories (see Table 9 later), providing a robust foundation for hypothesis testing.

4.2.1 Reliability and Convergent Validity

Internal consistency was assessed using Cronbach's alpha (α) and Composite Reliability (CR). As shown in Table 6, all values exceeded the 0.70 threshold recommended by Hair et al. [18], indicating high reliability. Convergent validity was confirmed as the Average Variance Extracted (AVE) for all constructs surpassed the 0.50 benchmark, signifying that the latent

variables explain more than half of the variance in their indicators.

Table 6. Reliability and Convergent Validity of Constructs

Construct	Product Category	α	CR	AVE
ATT	Smartwatch	0.893	0.905	0.760
	Traditional Watch	0.875	0.892	0.734
SN	Smartwatch	0.861	0.880	0.710
	Traditional Watch	0.876	0.894	0.738
PBC	Smartwatch	0.848	0.870	0.691
	Traditional Watch	0.833	0.859	0.674
PI	Smartwatch	0.890	0.905	0.761
	Traditional Watch	0.872	0.890	0.730

Note: All α and CR values exceed 0.70; all AVE values exceed 0.50, indicating satisfactory reliability and convergent validity.

4.2.2 Discriminant Validity

To ensure that the constructs are empirically distinct, we applied two rigorous criteria. First, the Fornell-Larcker criterion (Table 7) confirmed that the square root of the AVE for each construct was greater than its highest correlation with any other construct [22].

Table 7. Discriminant Validity Assessment (Fornell–Larcker Criterion)

Construct	ATT	SN	PBC	PI
Smartwatch	0.872			
SN	0.516	0.843		
PBC	0.542	0.488	0.831	
PI	0.635	0.589	0.571	0.872
Traditional Watch	0.857			
SN	0.493	0.859		
PBC	0.515	0.472	0.821	
PI	0.602	0.598	0.562	0.854
Note: Bold diagonal values represent the square root of AVE; all are greater than corresponding off–diagonal correlations, satisfying the discriminant validity criterion.				

Second, we examined the Heterotrait-Monotrait (HTMT) ratio of correlations (Table 8). All ratios remained well below the conservative threshold of 0.85 suggested by Henseler et al. [23], ruling out multicollinearity issues.

Table 8. Discriminant Validity Assessment (HTMT Ratio)

Construct Pairs	Smartwatch	Traditional Watch
ATT vs SN	0.61	0.58
ATT vs PBC	0.64	0.62
ATT vs PI	0.72	0.69
SN vs PBC	0.57	0.55
SN vs PI	0.68	0.70
PBC vs PI	0.66	0.63

4.3 Structural Model Outcomes

With the measurement model validated, we proceeded to test the structural relationships. The model fit indices for both categories were excellent, as summarized in Table 9.

Table 9. Model Fit Indices

Category	χ^2/df	CFI	TLI	RMSEA	SRMR
Smartwatch	2.148	0.948	0.936	0.054	0.042
Traditional	2.213	0.944	0.932	0.056	0.045
Thresholds	< 3.0	> 0.90	> 0.90	< 0.08	< 0.08

4.3.1 Path Coefficients

The structural estimates, presented in Table 10, reveal the distinct motivational architectures of the two products.

For smartwatches, attitude emerged as the dominant predictor ($\beta = 0.426$, $p < 0.001$), explaining the largest share of variance in intention. In contrast, for traditional watches, subjective norm took precedence ($\beta = 0.412$, $p < 0.001$), highlighting the normative nature of the decision. Notably, the models explained a substantial proportion of variance in purchase intention ($R^2_{Smart} = 61.4\%$; $R^2_{Trad} = 57.3\%$).

Table 10. Structural Model Results for Smartwatches and Traditional Watches

Path	Smartwatch β	p–value	Traditional Watch β	p–value
ATT → PI	0.426	< 0.001	0.294	< 0.001
SN → PI	0.341	< 0.001	0.412	< 0.001
PBC → PI	0.298	< 0.001	0.264	< 0.001
R^2 (PI)	0.614	–	0.573	–

Note: All path coefficients are significant at $p < 0.001$.

4.3.2 Interpretation of Structural Estimates

The statistical outputs provide immediate support for the hypothesized motivational asymmetry. For smartwatches, the standardized path coefficient for Attitude ($\beta = 0.426$) is not only statistically significant but also serves as the primary determinant of intention. This dominance suggests that the decision-making process for smartwatches is heavily anchored in utilitarian rationalization—users are primarily persuaded by the device's functional promises, such as health quantification and digital connectivity.

In stark contrast, the structural model for traditional watches reveals a reversal in predictor importance. Here, Subjective Norm ($\beta = 0.412$) exerts the strongest influence on intention. This shift indicates that the consumption of traditional timepieces is governed by a normative logic, where social signaling, prestige maintenance, and external validation outweigh personal functional evaluation. The Perceived Behavioral Control (PBC) remains a significant but secondary predictor in both models ($\beta \approx 0.28$), reinforcing the notion that while accessibility is necessary, it is not the differentiating driver of choice in this context.

4.3.3 Structural Model Visualization

To visually represent these divergent pathways, the standardized path estimates for both models are depicted in **Figure** 1 and Figure 2.

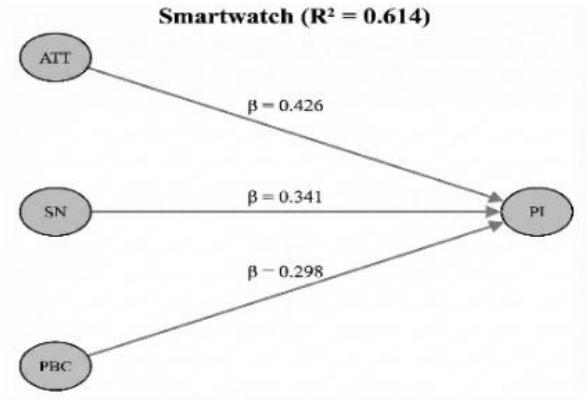

Figure 1. Standardized SEM Path Model for Smartwatch Purchase Intention

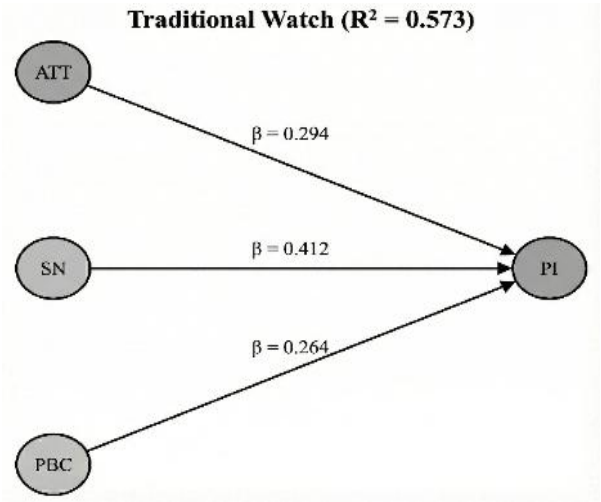

Figure 2. Standardized SEM Path Model for Traditional Watch Purchase Intention

4.3.4 Preliminary Comparative Insights

Before proceeding to the rigorous multi-group invariance tests, these separate structural estimations offer a compelling preliminary insight into the "Dual-Path" consumption mechanism.

The data suggest that Shenzhen's consumers do not view wristwear as a monolithic category. Instead, they appear to activate distinct psychological schemas depending on the product type. When evaluating a smartwatch, the consumer operates as a "pragmatist," calculating the input-output ratio of utility (High ATT influence). However, when evaluating a traditional watch, the same consumer shifts to a "social actor" mindset, prioritizing cultural fit and social appropriateness (High SN influence).

This observed bifurcation—where Attitude drives the new (tech) and Norms drive the old (tradition)—provides the necessary empirical justification for the subsequent Within-Respondent Comparative Path Tests (Section 4.4), which will formally quantify whether these differences are statistically significant.

4.4 Within-Respondent Comparative Path Tests

Because each respondent evaluated both a smartwatch and a traditional watch module, we implemented a within-respondent (paired-context) SEM comparison to formally test whether key TPB paths differ across contexts. The procedure follows the logic of multi-group SEM, but treats the two product contexts as repeated measures from the same individuals: we first verified measurement invariance and then tested targeted equality constraints on structural paths using nested model comparisons.

4.4.1 Establishing Measurement Invariance

Before comparing structural coefficients, we verified that the TPB constructs were measured equivalently across the smartwatch and traditional-watch contexts. Following the protocol of Steenkamp and Baumgartner [24], we estimated a sequence of increasingly constrained invariance models and evaluated changes in fit using the recommended $\Delta CFI <= 0.01$ criterion.

Configural invariance (baseline model): We first estimated a model with an identical factor structure in both contexts, while allowing all parameters to be freely estimated within each context. The baseline model showed acceptable fit ($\chi^2/df=2.18$, CFI=0.946, TLI=0.934, RMSEA=0.055), supporting the same measurement pattern for smartwatches and traditional watches.

Metric invariance (weak invariance): Next, we constrained the factor loadings to equality across contexts. The change in fit was negligible ($\Delta CFI=0.002$), well below the 0.01 cutoff, indicating that construct units are comparable across the two product contexts.

Scalar invariance (strong invariance): Finally, we constrained item intercepts. The additional fit change remained small ($\Delta CFI=0.006$). Given that strict scalar invariance is often difficult to achieve in consumer surveys, the evidence is consistent with at least partial scalar invariance, which is sufficient for meaningful comparison of structural relationships [21].

4.4.2 Statistical Comparison of Structural Paths

With invariance established, we proceeded to the core comparison of structural relationships. We estimated an unconstrained paired-context model in which ATT → PI, SN → PI, and PBC → PI were freely estimated for each context. To respect within-respondent dependence, corresponding constructs were allowed to correlate across contexts (e.g., ATT_smart with ATT_traditional), capturing stable respondent-level tendencies across the two modules. We then imposed one equality constraint at a time (e.g., ATT → PI_smart = ATT → PI_traditional) and compared each constrained model to the unconstrained model using (i) the chi-square difference test ($\Delta\chi^2$) and (ii) the Critical Ratio for Differences (CR_{diff}).

Table 11 reports the standardized coefficients (β), the estimated cross-context difference (Δβ), and 95% confidence intervals; $|CR_{diff}| > 1.96$ indicates $p < 0.05$.

Table 11. Cross-Context Path Comparison Results (Nested Equality-Constraint Tests)

Path	Smartwatch β	Traditional Watch β	Δβ	CR_{diff}	Significance
ATT → PI	0.426	0.294	0.132	3.21	$p < 0.01$
SN → PI	0.341	0.412	-0.071	-2.18	$p < 0.05$
PBC → PI	0.298	0.264	0.034	1.07	Ns
Note: $\|CR_{diff}\| > 1.96$ indicates statistical significance at the 0.05 level; ns = not significant. CI = confidence interval.					

4.4.3 Interpretation of Cross-Category Differences

The nested comparisons in Table 11 provide direct statistical evidence for the proposed cross-category asymmetry in motivational pathways:

The Rationality Gap: The Attitude -> Intention path is significantly stronger for smartwatches (β=0.426) than for traditional watches (β=0.294; Δβ=0.132, CR_{diff}=3.21, $p < 0.01$). The 95% confidence interval for Δβ excludes zero, indicating that smartwatch intentions rely more heavily on consumers' personal evaluations of utility and value.

The Normative Gap: Conversely, the Subjective Norm -> Intention path is significantly stronger for traditional watches (β=0.412) than for smartwatches (β=0.341; Δβ=-0.071, CR_{diff}=-2.18, $p < 0.05$). This pattern is consistent with traditional watches functioning more as socially anchored, symbolic purchases.

The Accessibility Parity: The Perceived Behavioral Control -> Intention path does not differ significantly across contexts (β_smart=0.298; β_traditional=0.264; Δβ=0.034, CR_{diff}=1.07, ns). In Shenzhen's mature retail environment, access constraints (price/availability/skills) appear similarly manageable for both categories.

4.4.4 Visual Summary of Comparative Path Strengths

To make these asymmetries easy to interpret, Figure 3 visually summarizes the standardized path strengths in each context and highlights the statistically significant differences identified in Table 11.

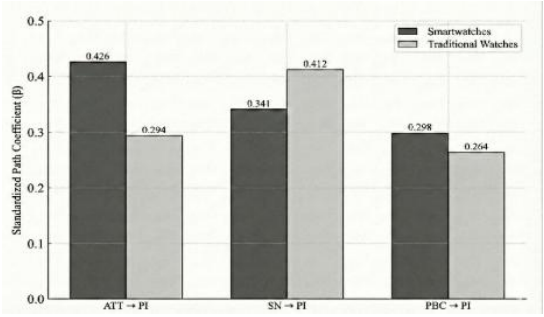

Figure 3. Comparative Path Strengths Across Product Categories

Taken together, the paired-context tests corroborate the paper's central claim: while both products occupy the same usage space, smartwatch purchase intentions are more strongly grounded in individual attitude-based evaluation (a utilitarian, self-referential route), whereas traditional-watch intentions are more sensitive to perceived social expectations (a normative, outward-facing route), with perceived control operating comparably across both categories.

4.5 Discussion of Findings

The empirical evidence collected in Shenzhen offers robust support for a dual-path motivational framework in the wristwear market. The data delineate a clear bifurcation in consumer logic, where the functional and the symbolic are weighed differently depending on the product's value proposition.

4.5.1 The Rational–Utilitarian Pathway (Smartwatch Dominance)

The finding that Attitude (β=0.426) is the paramount driver for smartwatch adoption corroborates the "utilitarian lifestyle" hypothesis. In the digitized ecosystem of Shenzhen, consumers evaluate smartwatches primarily as instruments of efficiency. The strong link between attitude and intention suggests that the decision is the result of a cognitive calculus: users assess the tangible benefits—biometric tracking, notification management, and payment ease—and form an intention based on these functional outcomes [12]. This aligns with Acikgoz et al.'s [11] observation that in high-tech contexts, "what the device does" overrides "what the device means."

4.5.2 The Normative–Symbolic Pathway (Traditional Watch Dominance)

In contrast, the dominance of Subjective Norm (β= 0.412) for traditional watches reveals that these items function as totems of social propriety. Even in a tech-forward city, the traditional timepiece remains a vessel for cultural signaling. The decision to purchase is heavily indexed on social expectations—whether for validating professional status or adhering to gift-giving rituals [16]. This result statistically confirms the "poisoned gift" paradox described by Kessous et al. [14], where the utility of the object is secondary to its ability to satisfy the social gaze.

4.5.3 The Stability of Control (PBC)

The analysis revealed no significant difference in the role of Perceived Behavioral Control (Δβ= 0.034, ns). This is a critical contextual finding. It implies that in Shenzhen's mature consumer market, "access" is a hygiene factor rather than a differentiator. Whether buying a high-tech Apple Watch or a classic mechanical piece, consumers feel equally capable regarding affordability and purchase channels. Thus, the battle for the wrist is not fought on accessibility, but on motivation—the clash between the desire for data (ATT) and the need for status (SN).

5. CONCLUSION AND IMPLICATIONS

5.1 Summary of Findings

This study set out to dismantle the monolithic view of watch consumption in the digital age. By situating the inquiry in Shenzhen—a metropolis where hyper-digital lifestyles collide with deep-seated cultural rituals—we utilized a dual-product TPB framework to reveal how consumer motivation bifurcates.

The empirical evidence crystallizes a clear dichotomy in value perception. As summarized in Table 12, our central thesis holds true: the "wrist" is a contested space between two distinct psychological regimes.

(1) The Utilitarian Regime: For smartwatches, purchase intention is overwhelmingly driven by Attitude (ATT). This confirms that consumers view these devices as tools for efficiency, health quantification, and ecosystem integration. The decision is rational, calculated, and outcome-oriented.
(2) The Symbolic Regime: For traditional watches, intention is governed by Subjective Norm (SN). This validates the "poisoned gift" paradox, where the value of the object is extrinsic—derived from social approval, status signaling, and adherence to ceremonial etiquette rather than intrinsic utility.
(3) The Accessibility Baseline: Perceived Behavioral Control (PBC) exerts a significant but uniform influence across both categories. In a mature market like Shenzhen, access is a prerequisite, not a differentiator.

Table 12. Summary of Hypothesis Testing Results

Hypothesis	Statement (Short Form)	Smartwatch β	Traditional Watch β	Dominant Effect	Supported?
H1a	ATT → PI (positive)	0.426	0.294	Smartwatch	√
H1b	SN → PI (positive)	0.341	0.412	Traditional	√
H1c	PBC → PI (positive)	0.298	0.264	–	√
H2	ATT > SN for smartwatches	0.426 > 0.341	–	Smartwatch	√
H3	SN > ATT for traditional watches	–	0.412 > 0.294	Traditional	√

Note: All path coefficients are significant at $p < 0.001$. Bold values indicate the stronger path for that category.

5.2 Theoretical Contributions

This research advances the literature on consumer behavior and technology adoption in four substantive ways:

(1) Validating a Dual-Product TPB Framework. Prior TPB studies have largely suffered from "single-category myopia," modeling adoption in isolation [9]. We demonstrate that the predictive power of TPB constructs is value-contingent. By modeling competing products within the same respondent pool, we show that the "rational consumer" (ATT-driven) and the "social consumer" (SN-driven) can coexist within the same individual, activated simply by changing the object of evaluation.
(2) Quantifying Motivational Asymmetry. While qualitative studies have hinted at the difference between functional and symbolic goods, this study provides rigorous statistical evidence of construct asymmetry. We quantify the "rationality gap" (Attitude is significantly stronger for smartwatches) and the "normative gap" (Subjective Norm is significantly stronger for traditional watches), offering a precise psychological calibration of the wristwear market.
(3) Contextualizing the "Techno-Cultural" Paradox. By anchoring the study in Shenzhen, we answer the call to embed consumer research in specific socio-technical contexts. We show that high digital infrastructure (which boosts PBC and ATT for tech) does not obliterate traditional norms; rather, they co-evolve. The findings suggest that modernization does not replace tradition but rather compartmentalizes it—allocating "efficiency" to the smartwatch and "meaning" to the mechanical watch.
(4) The "Utilitarian Lifestyle" Lens. We introduce Utilitarian Lifestyle Orientation (ULO) as an interpretive mechanism. This explains why Attitude dominates smartwatch adoption: for the quantified self, the device is an extension of their agency. This connects TPB with broader lifestyle segmentation theories, suggesting that future models should account for a user's general orientation toward data and efficiency.

5.3 Managerial Implications

For practitioners, the "one-size-fits-all" marketing approach is dead. The findings dictate a bifurcated strategy:

5.3.1 Smartwatch Strategy: Sell the Outcome, Not the Object

The "Quantified Self" Narrative: Marketing should suppress "fashion" cues and amplify "performance" cues. Campaigns must visualize the outcome of usage—better sleep scores, completed fitness rings, or seamless Alipay integration. The message is simple: "This device makes you a more efficient version of yourself."

Ecosystem Lock-in: Since Attitude is driven by utility, brands must emphasize interoperability. Features that allow the watch to control smart home devices or unlock cars (high utility) will directly boost ATT and, consequently, purchase intention [25].

5.3.2 Traditional Watch Strategy: Sell the Heritage, Not the Time

The "Ceremonial Prop" Narrative: Traditional watches should be positioned as essential artifacts for key life moments—weddings, promotions, and business signings. Marketing imagery should focus on the social gaze—others admiring the watch—to activate the Subjective Norm pathway.

Legacy and Lineage: In a city obsessed with the future (Shenzhen), the traditional watch offers a connection to the past. Brands should double down on storytelling related to craftsmanship, permanence, and intergenerational transfer to justify the purchase as a "deposit" in one's social capital [3].

5.3.3 Retail Orchestration: The Hybrid Experience

Zoning: Physical stores should physically separate these logics. The smartwatch zone should be high-tempo, interactive, and data-rich (appealing to ATT). The traditional watch zone should be low-tempo, private, and service-heavy (appealing to SN). This allows the consumer to switch "mental gears" without cognitive dissonance.

5.4 Limitations and Future Research Directions

Scientific inquiry is an iterative process, and this study is not without its boundary conditions.

(1) Causality: The cross-sectional nature of the data precludes definitive causal claims. While SEM provides strong evidence of association, longitudinal designs are needed to track how these motivations evolve—for example, does a smartwatch user eventually "graduate" to a traditional watch for status?
(2) Sampling Bias: Although Shenzhen is a bellwether city, its unique "high-tech/high-tradition" profile may limit generalizability to lower-tier cities where digital literacy (and thus PBC) might be lower.
(3) Self-Report Bias: Reliance on survey data carries the risk of social desirability bias, particularly regarding sensitive topics like "status seeking" (SN).

Future Research Agenda: To deepen our understanding, future scholars should:

(1) Integrate Macro-Theories: Combine TPB with Self-Determination Theory (SDT) [26] to explore if smartwatch adoption fulfills the need for "competence," while traditional watches fulfill the need for "relatedness."
(2) Test Moderated Mediation: Investigate how individual differences, such as Social Identity [27], moderate the SN → Intention link. For instance, do consumers with high "power distance" orientation rely even more heavily on norms?
(3) Adopt Multi-Method Approaches: Supplement surveys with behavioral data (e.g., actual purchase logs or biological stress responses to status threats) to triangulate the findings.

Declarations

Conflict of Interest: The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Ethical Approval: The study protocol was reviewed and approved by the Lincoln University College Ethical Committee (LUC EC).

Consent to Participate: Informed consent was obtained from all individual participants included in the study. All participants were 18 years of age or older.

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Data Availability: The dataset generated and analyzed during the current study is available from the corresponding author on reasonable request.

Author Contribution: Xiaoqiang Fu: Conceptualization, Methodology, Software, Resources, Investigation, Data curation, Formal analysis, Validation, Writing-Original Draft, Writing-Review and Editing. Oyyappan Duraipandi: Research Methodology guidance, Formal analysis, Supervision.

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