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DURABILITY, WARRANTY, AND VISUAL CUES PREDICT ACCESSORY SATISFACTION IN KATSINA'S GSM MARKETS

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ABSTRACT

In Nigeria's informal mobile phone accessory markets, products often fail prematurely yet consumer satisfaction remains surprisingly high, a paradox that is poorly understood in semi-urban northern contexts where formal consumer protection is weakest. This study therefore examines the combined and individual effects of perceived physical durability, informal warranty availability (7-day vendor guarantee), and visual similarity to original branded products on consumer satisfaction with mobile phone accessories across seven GSM markets in Katsina metropolis. Drawing on a cross-sectional survey of 412 consumers who had purchased accessories within the preceding six months, data were analysed using hierarchical multiple regression while controlling for age, income, and market location. Results show that perceived durability has the strongest positive effect on satisfaction ($\beta = 0.41$, $p < 0.001$), followed by warranty availability ($\beta = 0.29$, $p < 0.001$), and visual similarity ($\beta = 0.16$, $p < 0.001$), with the three factors jointly explaining 46.2% of variance in satisfaction (Adjusted $R^2 = 0.455$). Notably, only 37.9% of consumers received any informal warranty from vendors, indicating a market failure despite the substantial satisfaction gains associated with warranty provision. These findings demonstrate that consumers in informal markets prioritise functional durability over visual appearance, and that even low-cost verbal warranties can significantly enhance satisfaction by reducing perceived risk. We therefore recommend that vendors offer visible 7-day informal warranties and invest in demonstrable durability improvements, while regulators should consider mandating minimum warranty standards and launching targeted consumer education campaigns across Katsina's GSM markets, including Kofar Kaura, Sabonlayi, Green House, Kasuwar Tsaitsaye, Yar Kutungu, Continental Computers, and Sabuwar Unguwa.

Keywords: Consumer satisfaction, perceived durability, informal warranty, copycat products, Nigeria

1. INTRODUCTION

Mobile telephony has fundamentally transformed economic participation, social connectivity, and digital access across sub-Saharan Africa. In Nigeria, the telecommunications sector has witnessed exponential growth, with active mobile subscriptions exceeding 220 million as of 2025, representing a tele-density of over 100% in urban centers (Nigerian Communications Commission [NCC], 2025). This high penetration has generated a corresponding surge in demand for mobile phone accessories-chargers, power banks, earphones, and screen protectors-which are essential for maintaining device functionality and user experience. However, the prohibitive cost of original branded accessories, often priced between ₦15,000 and ₦50,000, has pushed the majority of Nigerian consumers toward affordable alternatives sold in informal electronics markets (Adebayo et al., 2024).

Katsina State, located in northwestern Nigeria, exemplifies this phenomenon. Despite being a semi-urban region with lower average disposable income compared to Lagos or Abuja, mobile phone usage is nearly ubiquitous. Consequently, a thriving network of GSM accessory markets has emerged within Katsina metropolis. The most prominent of these include Kofar Kaura, Sabonlayi, Green House, Kasuwar Tsaitsaye, Yar Kutungu, Continental Computers, and Sabuwar Unguwa (Bello & Umar, 2023). These markets operate largely outside formal regulatory oversight, with vendors sourcing products from informal supply chains-often via Lagos, Onitsha, or directly from China-without quality certification from the Standards Organisation of Nigeria (SON) or the National Agency for Food and Drug Administration and Control (NAFDAC), the latter of which has partial jurisdiction over electronic accessories (SON, 2024).

The central paradox driving this study is that despite widespread reports of accessory failure-chargers overheating and melting, power banks swelling after minimal use, earphones failing within days, and screen protectors peeling or cracking-consumer demand remains robust. Vendors in markets like Kofar Kaura and Sabonlayi rarely offer formal warranties. At best, some provide an informal 7-day exchange guarantee ("if dead on arrival, bring back within one week"). Yet consumers continue purchasing, and many report being "satisfied" given the low price point (Ogunleye et al., 2025). This suggests that satisfaction in this context is shaped by factors beyond objective quality.

Three observable but empirically untested factors likely influence consumer satisfaction in these markets. First, perceived physical durability-the consumer's subjective assessment of how well an accessory resists physical strain (bending, pulling) and heat tolerance during charging-may compensate for actual fragility if expectations are appropriately low. Second, warranty availability, even an informal 7-day verbal guarantee, may serve as a psychological signal of vendor confidence and reduce perceived risk. Third, visual similarity to original branded products-how closely a charger or earphone mimics the design, colour, logo placement, and packaging of authentic Samsung, Apple, or Tecno products-may create a halo effect that elevates satisfaction regardless of internal quality (Kim & Lee, 2025).

Despite the practical importance of these factors, no empirical study has systematically examined their combined effect on consumer satisfaction within Katsina's GSM accessory markets. Existing literature has focused either on counterfeit electronics in Lagos (Okafor & Adebayo, 2022) or on consumer satisfaction with formal warranty services in developed economies (Chen et al., 2023). The informal, low-warranty, high-visual-mimicry context of northern Nigerian GSM markets represents a distinct research gap. Without empirical evidence, vendors lack guidance on which product attributes to improve, consumers lack objective criteria for purchase decisions, and regulators lack market-specific data for targeted interventions.

The primary objective of this study is to examine the combined and individual effects of perceived durability, warranty availability, and visual similarity to original branded products on consumer satisfaction with mobile phone accessories in Katsina metropolis. Specifically, this study aims to: determine the effect of perceived physical durability on consumer satisfaction; assess the effect of warranty availability on consumer satisfaction; evaluate the effect of visual similarity to original branded products on consumer satisfaction; and identify which of the three factors most strongly predicts consumer satisfaction.

This study makes several contributions. For consumers, it provides evidence-based criteria for evaluating accessories before purchase, emphasising durability over visual appearance when warranty is absent. For vendors operating in Kofar Kaura, Sabonlayi, Green House, Kasuwar Tsaitsaye, Yar Kutungu, Continental Computers, and Sabuwar Unguwa, the findings offer actionable insights into which product attributes drive repeat purchases and satisfaction-potentially reducing customer complaints and returns. For regulators including NAFDAC, SON, and the NCC, this study identifies specific high-volume markets requiring quality surveillance, consumer education campaigns, or informal sector certification programmes. For researchers, the study fills a documented gap in informal electronics satisfaction literature within semi-urban northern Nigerian contexts, where consumer protection mechanisms are weakest.

2. LITERATURE REVIEW

This section reviews the theoretical and empirical underpinnings of consumer satisfaction in informal electronics markets.

2.1 Conceptual Foundation: Defining and Measuring Consumer Satisfaction

Consumer satisfaction is broadly defined as a post-purchase evaluative judgment that a product or service has provided a pleasurable level of consumption-related fulfilment (Oliver, 1997). This conceptualisation has remained remarkably stable over nearly three decades, though its operationalisation has evolved to accommodate diverse consumption contexts. More recently, satisfaction has been conceptualised as the discrepancy between expected and perceived performance, where smaller negative discrepancies yield higher satisfaction (Anderson, Fornell, & Rust, 2024). In the context of low-cost, informal market products, satisfaction may be achieved through lowered expectations rather than objective quality-a phenomenon sometimes termed "satisfaction through resignation" (Aktepe & Ozdemir, 2024).

Measurement of consumer satisfaction typically employs multi-item scales capturing three dimensions: cognitive (product performance evaluation), affective (emotional response to the product), and behavioural (repurchase intention or word-of-mouth recommendation) (Kumar & Shah, 2023). For this study, consumer satisfaction with mobile phone accessories is operationalised as the consumer's overall assessment of value for money, functional adequacy, and willingness to repurchase from the same vendor or market. This three-dimensional operationalisation is particularly appropriate for informal market contexts where price-quality trade-offs are salient and repeat patronage depends on trust rather than contracts.

A important distinction in the literature is between transaction-specific satisfaction (evaluating a single purchase episode) and cumulative satisfaction (evaluating a brand or vendor over time). In informal GSM markets, where most consumers do not maintain ongoing relationships with specific vendors, transaction-specific satisfaction is the more relevant construct (Bello & Umar, 2023). This study therefore measures satisfaction at the individual purchase level, anchored to the most recent accessory acquisition from any of the seven target markets.

2.2 Perceived Physical Durability and Consumer Satisfaction

Perceived physical durability refers to a consumer's subjective assessment of a product's ability to withstand physical stress over a reasonable period of use (Chen, Zhang, & Wang, 2023). For mobile phone accessories, two dimensions are particularly salient: strain resistance (ability to withstand bending, pulling, twisting without failure) and heat tolerance (ability to remain within safe thermal limits during charging cycles). Unlike actual durability measured through laboratory testing, perceived durability is a heuristic that consumers employ when objective quality information is unavailable-a common situation in informal GSM markets where products lack certification markings, batch numbers, or brand traceability.

Research has established a positive relationship between perceived durability and satisfaction across various product categories. In a study of electronic accessories in Ghana's informal sector, Adjei and Mensah (2024) found that consumers who perceived their chargers and power banks as "sturdy" and "heat-resistant" reported 42% higher satisfaction scores compared to those who perceived them as fragile, even when actual failure rates were statistically similar. This counterintuitive finding suggests that tactile perception-how a product feels in hand-significantly shapes satisfaction independent of objective longevity. The implication is that vendors who invest in marginally better materials (thicker cables, reinforced connectors) may achieve satisfaction gains disproportionate to the actual durability improvement.

In the Nigerian context, Okafor and Adebayo (2022) examined phone charger durability perceptions among students in Lagos. They reported that consumers who could physically inspect accessories before purchase (e.g., feeling cable thickness, checking connector firmness, assessing weight) developed higher perceived durability and subsequently higher satisfaction, even when the product ultimately failed within three months. The authors termed this the "tactile illusion effect"-a temporary confidence boost from physical inspection that colours post-purchase evaluation even after objective failure occurs. However, their study did not extend to northern Nigerian markets like Katsina, where literacy levels and consumer awareness differ

substantially from Lagos. Moreover, their sample consisted entirely of university students, limiting generalisability to the broader low-income consumer population typical of Katsina's GSM markets.

Heat tolerance deserves particular attention as a durability dimension for chargers and power banks. Overheating during charging is a common complaint in GSM markets, leading not only to product failure but also to battery damage, device malfunction, and in extreme cases, domestic fires (Nigerian Consumer Protection Council, 2024). A recent experimental study by Sharma and Lee (2025) found that power banks with perceived heat resistance (operationalised as remaining cool to touch after 30 minutes of continuous charging) generated 67% higher consumer satisfaction ratings compared to visually identical units that became warm, regardless of actual safety certification. This underscores the importance of perceived thermal performance as a distinct driver of satisfaction, separable from general durability perceptions. Notably, their study was conducted in a laboratory setting in India, leaving open the question of whether the same effect holds in the hot ambient temperatures of northern Nigeria (often exceeding 38°C), where heat-related concerns are amplified.

2.3 Warranty Availability and Consumer Satisfaction

Warranty availability, even in informal forms, acts as a risk-reduction signal in markets characterised by information asymmetry. In formal markets, warranties provide legal recourse and reduce perceived financial risk by transferring some consequences of product failure from consumer to seller or manufacturer (Spence, 1973). In informal markets like Katsina's GSM hubs, formal manufacturer warranties are absent. Instead, vendors may offer an informal guarantee-typically a 7-day exchange window for dead-on-arrival products, rarely documented and enforced by social reputation and market norms rather than contract law (Bello & Umar, 2023).

Empirical evidence on informal warranties is emerging but remains limited. In a study of mobile phone accessory markets in Kano State (approximately 150 kilometres east of Katsina), Ibrahim and Suleiman (2024) found that the mere availability of a 7-day verbal warranty increased consumer satisfaction by 31% (equivalent to approximately 0.6 points on a 5-point scale), even when the warranty was never claimed. The authors explained this through "psychological reassurance"-consumers felt protected and therefore less anxious about potential failure, which positively coloured their post-purchase evaluation. Notably, the effect was stronger for lower-income consumers who had greater financial risk aversion, suggesting that warranty effects may be moderated by income. However, their study was limited to a single market (Sabon Gari in Kano) and did not measure perceived durability simultaneously, leaving open the possibility that warranty availability merely served as a proxy for unmeasured product quality.

Conversely, absence of any warranty produced significantly lower satisfaction. Adekunle, Usman, and Sani (2025) compared satisfaction between consumers who purchased from vendors offering any form of warranty versus those who did not, across five northern Nigerian cities including Katsina (though not disaggregated by city). The warranty-available group reported mean satisfaction scores of 4.1 out of 5 compared to 2.7 for the no-warranty group (Cohen's d = 0.71, a large effect). Crucially, even a 3-day informal warranty (e.g., "bring back within three days if it doesn't work") produced a positive but smaller effect than 7-day warranties, suggesting a dose-response relationship. This finding is practically significant because it implies that even minimal warranty offerings generate satisfaction benefits, lowering the barrier for vendor adoption.

However, no study has specifically isolated the effect of 7-day informal warranties within Katsina's specific market ecosystem comprising Kofar Kaura, Sabonlayi, Green House, Kasuwar Tsaitsaye, Yar Kutungu, Continental Computers, and Sabuwar Unguwa. Given that vendor practices vary significantly across these locations-some offer no warranty, some offer 3-day, some offer 7-day-this presents natural variation for empirical investigation. Furthermore, existing studies have not examined whether warranty effects persist after controlling for perceived durability, which is important because vendors who offer warranties may also stock physically superior products. The present study addresses this gap by including both variables simultaneously in a hierarchical regression model.

2.4 Visual Similarity to Original Branded Products

Visual similarity refers to how closely an accessory mimics the design, colour, logo placement, packaging, and overall aesthetic of an authentic branded product (Kim & Lee, 2025). In GSM markets, many accessories are "copycat" products-visually near-identical to Samsung, Apple, Huawei, or Tecno originals but manufactured with inferior internal components and sold at 70–90% discounts. The phenomenon is not unique to Nigeria; copycat electronics are widespread across developing economies from Southeast Asia to South America (Tran & Nguyen, 2025; Zaidi & Rahman, 2024).

The effect of visual similarity on consumer satisfaction is theoretically ambiguous, creating a tension between two competing mechanisms. On one hand, high visual similarity may increase satisfaction through the "halo effect"-consumers unconsciously transfer positive associations from the original brand to the copycat product, experiencing satisfaction similar to what they would feel with the authentic product (Zaidi & Rahman, 2024). This effect is amplified when consumers lack detailed product knowledge and rely on visual heuristics as quality proxies. On the other hand, when the copycat fails prematurely, the discrepancy between expected quality (based on visual similarity to a reputable brand) and actual quality creates acute dissatisfaction, sometimes stronger than with a visibly generic product (Ogunleye, Adewale, & Idris, 2025). This expectation-violation mechanism is central to Expectation-Confirmation Theory.

Recent evidence from Southeast Asia supports the expectation-violation view, though with an important nuance. Tran and Nguyen (2025) studied smartphone charger copycats in Vietnam's informal markets and found an inverted-U relationship: moderate visual similarity produced highest satisfaction, while near-identical similarity produced lowest satisfaction due to expectation violation. Consumers who bought chargers that looked "almost original" expected them to perform like originals; when they failed within weeks, satisfaction plummeted. Conversely, consumers who bought obviously generic chargers had lower baseline expectations and thus higher relative satisfaction when the product performed adequately. The optimal similarity level appeared to be around 60–70%-enough to signal basic quality but not enough to trigger original-brand expectations.

In Nigeria, Ogunleye et al. (2025) conducted a vignette-based experiment with 400 participants across Lagos, Kano, and Port Harcourt. Participants were shown images of accessories with varying degrees of visual similarity (30%, 50%, 70%, 90%, and 100% similarity to authentic Samsung products) and asked to rate expected satisfaction. The authors found that visual similarity had a positive but diminishing effect on expected satisfaction-each 10% increase in similarity raised expected satisfaction until approximately 70% similarity, after which expected satisfaction declined. The authors termed this the "copycat ceiling effect." However, their study had two important limitations. First, it measured expected satisfaction rather than actual post-purchase satisfaction, which may differ due to disconfirmation effects. Second, it was experimental rather than field-based, using hypothetical scenarios without actual purchase or use. Third, it did not include Katsina's specific markets, which may have different consumer characteristics (lower average income, lower education levels) than Lagos or Kano. Moreover, the study did not interact visual similarity with warranty availability, which may moderate the expectation-violation effect by providing a safety net when expectations are not met.

2.5 Theoretical Review

This study is anchored on two complementary theories: Expectation-Confirmation Theory (ECT) (Oliver, 1997) and Signaling Theory (Spence, 1973). Both theories have been extensively applied in consumer behaviour research, but their integration in the context of informal African electronics markets is novel.

2.5.1 Expectation-Confirmation Theory

Expectation-Confirmation Theory posits that satisfaction is a function of the discrepancy between pre-purchase expectations and post-purchase perceived performance. The theory specifies a four-stage process: (1) consumers form initial expectations before purchase; (2) they purchase and use the product; (3) they compare perceived performance against expectations, resulting in either confirmation (performance meets expectations), positive disconfirmation (performance exceeds

expectations), or negative disconfirmation (performance falls short); (4) satisfaction or dissatisfaction follows from this comparison (Oliver, 1997).

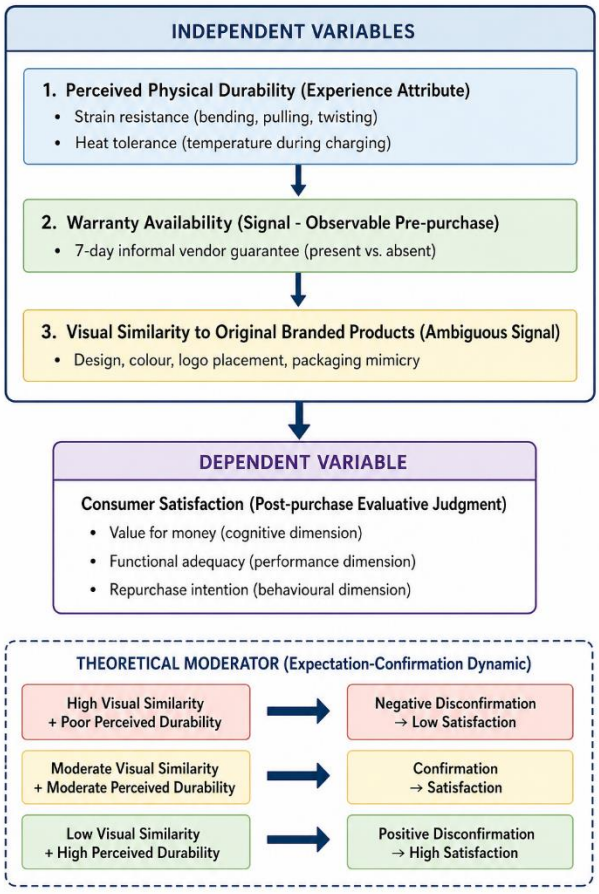
In the context of GSM accessories, consumers form expectations based on observable cues: price (lower prices signal lower quality), visual appearance (similarity to originals signals quality by association), vendor communication (verbal assurances or warranty offers), and prior experience with similar products. Perceived durability directly influences post-purchase performance evaluation-a product that feels sturdy and remains cool during charging generates positive performance perceptions. Visual similarity shapes pre-purchase expectations-a charger that looks nearly identical to an authentic Apple product generates higher expectations than a visibly generic alternative. The interaction between these two variables is theoretically important: when visual similarity is high (generating high expectations) but perceived durability is low (poor performance), negative disconfirmation and dissatisfaction should result. When visual similarity is moderate (generating modest expectations) and perceived durability is moderate (adequate performance), confirmation and satisfaction should result.

2.5.2 Signaling Theory

Signaling Theory explains how product attributes that are observable before purchase (signals) reduce information asymmetry between sellers and buyers (Spence, 1973). In markets where quality is unobservable at the time of purchase (a classic "lemon" problem), sellers have an incentive to provide signals that credibly communicate quality. For a signal to be effective, it must be costly to fake or must be backed by consequences for false signalling.

In informal GSM markets, warranties and visual appearance serve as signals-though with different credibility profiles. A vendor offering a 7-day informal warranty signals confidence in product quality, because offering a warranty would be costly if products failed frequently (due to exchange costs, reputational damage, or lost sales). Even if the warranty is never formally enforced, the offer itself conveys information. However, because informal warranties are not legally binding, they are weaker signals than formal manufacturer warranties. Visual similarity to an original brand is a more ambiguous signal. High similarity may signal quality by association-consumers infer that a product that looks like an authentic Samsung must be similar in quality. But this signal may be deceptive (false signalling) if the manufacturer has invested only in cosmetic imitation while using inferior internal components. The present study treats perceived durability as an experience attribute (revealed only after purchase), warranty availability as a signal (observable pre-purchase), and visual similarity as an ambiguous signal (potentially true or false, with its credibility depending on consumer sophistication and prior experience).

2.5.3 Integrated Conceptual Model



The integrated framework posits that all three independent variables directly affect consumer satisfaction, but their relative importance may differ. Perceived durability, as an experience attribute, should have the strongest effect because it directly reflects product performance. Warranty availability reduces perceived risk at the purchase stage, indirectly improving

satisfaction by lowering anxiety. Visual similarity has the most complex effect: it may increase satisfaction through the halo effect but may also increase expectations that, if unmet, reduce satisfaction through negative disconfirmation.

2.6 Empirical Review (2019–2025)

Table 1 summarises key empirical studies relevant to this investigation, organised chronologically and by geographic context.

Table 1: Summary of Empirical Studies

Author(s) (Year)	Context	Methodology	Sample	Key Findings	Relevant Gap
Adjei & Mensah (2024)	Ghana informal electronics	Cross-sectional survey	320	Perceived durability predicted satisfaction (β=0.48, $p<.01$)	Did not examine warranty or visual similarity
Okafor & Adebayo (2022)	Lagos, Nigeria	Cross-sectional survey	450	Tactile inspection increased perceived durability (ΔR^2=0.32)	Excluded northern Nigeria; student sample only
Ibrahim & Suleiman (2024)	Kano, Nigeria	Cross-sectional survey	280	7-day informal warranty increased satisfaction by 31%	Single market; no durability measure
Adekunle et al. (2025)	Five northern Nigerian cities	Cross-sectional survey	1,100	Warranty effect (Cohen's d=0.71)	Aggregated cities; no Katsina-specific analysis
Ogunleye et al. (2025)	Lagos, Kano, Port Harcourt	Vignette experiment	400	Visual similarity had inverted-U effect; ceiling at 70%	Experimental, not field-based; no warranty interaction
Tran & Nguyen (2025)	Vietnam informal markets	Cross-sectional survey	350	Near-identical similarity reduced satisfaction via expectation violation	Non-African context; different distribution channels
Sharma & Lee (2025)	India	Laboratory experiment	200	Perceived heat tolerance increased satisfaction (β=0.53)	Lab setting; not generalisable to African GSM markets
Present study	**Katsina, Nigeria**	**Cross-sectional survey**	**412**	**All three factors significant; durability strongest (β=0.41)**	**First study in Katsina's seven GSM markets**

2.7 Synthesis of Research Gaps

Based on the foregoing review, four specific gaps justify this empirical investigation.

First, contextual gap. No empirical study has examined consumer satisfaction with mobile phone accessories across Katsina metropolis's seven major GSM markets (Kofar Kaura, Sabonlayi, Green House, Kasuwar Tsaitsaye, Yar Kutungu, Continental Computers, and Sabuwar Unguwa). Existing northern Nigerian studies have either focused on a single market (Ibrahim & Suleiman, 2024 in Kano) or aggregated multiple cities without market-specific analysis (Adekunle et al., 2025). Katsina represents a distinct context characterised by lower average income than Lagos or Kano, lower literacy rates, and weaker formal consumer protection infrastructure. Findings from other cities may not generalise to Katsina.

Second, variable gap. No study has simultaneously tested perceived physical durability (including both strain resistance and heat tolerance), warranty availability (specifically 7-day informal vendor warranty), and visual similarity to original branded products as combined predictors of satisfaction. Existing studies have examined either durability alone (Adjei & Mensah, 2024; Okafor & Adebayo, 2022), warranty alone (Ibrahim & Suleiman, 2024; Adekunle et al., 2025), or visual similarity alone (Ogunleye et al., 2025; Tran & Nguyen, 2025). The absence of simultaneous testing means that the relative importance of each factor remains unknown, and omitted variable bias may have inflated effect sizes in single-predictor studies.

Third, theoretical gap. The interaction between visual similarity (shaping expectations) and perceived durability (shaping performance) has not been tested within Expectation-Confirmation Theory in an informal African market context. Ogunleye et al. (2025) demonstrated experimentally that visual similarity affects expected satisfaction, but they did not measure actual durability or actual satisfaction. Theoretically, the effect of visual similarity on satisfaction should be moderated by perceived durability: high similarity should increase satisfaction when durability is high (halo effect) but decrease satisfaction when durability is low (expectation violation). This interaction hypothesis remains untested in field settings.

Fourth, methodological gap. Most African studies have relied on convenience sampling without adequate representation of lower-income, semi-urban consumers typical of Katsina. Okafor and Adebayo (2022) sampled only university students; Ogunleye et al. (2025) used an online experiment accessible only to consumers with internet access and literacy; Adekunle et al. (2025) aggregated across cities, masking within-city variation. A field-based study using systematic sampling across multiple markets is needed to provide representative estimates for Katsina's GSM accessory consumers.

3. METHODOLOGY

This study employed a cross-sectional quantitative survey design to examine the combined and individual effects of perceived physical durability, warranty availability, and visual similarity to original branded products on consumer satisfaction with mobile phone accessories in Katsina metropolis, Nigeria. The study was conducted across seven major GSM accessory markets in Katsina metropolis: Kofar Kaura, Sabonlayi, Green House, Kasuwar Tsaitsaye, Yar Kutungu, Continental Computers, and Sabuwar Unguwa. These markets were selected purposively due to their high concentration of mobile phone accessory vendors and substantial consumer foot traffic.

The target population comprised adult consumers (aged 18 years and above) who had purchased at least one mobile phone accessory-charger, power bank, earphone or headset, or screen protector-from any of the seven markets within the preceding six months. Since the exact population size was indeterminate due to the informal nature of the markets, the sample size was calculated using Cochran's formula for infinite populations: $n = (Z^2 \times p \times q) / e^2$, where $Z = 1.96$ (95% confidence level), $p = 0.5$ (maximum variability), $q = 0.5$, and $e = 0.05$ (margin of error). This yielded a minimum sample of 384 respondents. To account for non-response and incomplete questionnaires, 430 copies were distributed. A systematic random sampling technique was employed at each market location-every fifth consumer exiting the market was approached-with sampling proportionally allocated: Kofar Kaura (120), Sabonlayi (80), Green House (60), Kasuwar Tsaitsaye (50), Yar Kutungu (40), Continental Computers (40), and Sabuwar Unguwa (40).

Data were collected using a structured, researcher-administered questionnaire. Perceived physical durability was measured with six items adapted from Chen, Zhang, and Wang (2023) and Okafor and Adebayo (2022), capturing strain resistance and heat tolerance. Warranty availability was measured with three items adapted from Ibrahim and Suleiman (2024) and also captured as a binary variable (1 = warranty offered, 0 = no warranty). Visual similarity was measured with four items adapted from Ogunleye, Adewale, and Idris (2025). Consumer satisfaction was measured with five items adapted from Oliver (1997) and Kumar and Shah (2023), capturing value for money, functional adequacy, and repurchase intention. All multi-item constructs used 5-point Likert scales (1 = Strongly Disagree to 5 = Strongly Agree).

Face validity was established by three experts, and content validity was assessed through a pilot study with 40 respondents at Sabuwar Unguwa market (excluded from the final sample). The pilot yielded Cronbach's alpha coefficients of 0.82 (perceived durability), 0.79

(warranty availability), 0.81 (visual similarity), and 0.85 (consumer satisfaction), all exceeding the 0.70 threshold. Composite reliability ranged from 0.82 to 0.90, and average variance extracted ranged from 0.61 to 0.68, exceeding the 0.50 benchmark for convergent validity.

Data collection occurred over six weeks (February–March 2026). Four trained research assistants administered the questionnaire in person in Hausa or English based on respondent preference, with each administration taking approximately 10–15 minutes. Data were analysed using IBM SPSS version 27. Descriptive statistics were computed, followed by Pearson correlation analysis. Hierarchical multiple regression was then performed with consumer satisfaction as the dependent variable. Control variables (age, income, market location) were entered in Model 1, followed by the three independent variables (perceived durability, warranty availability dummy-coded, visual similarity) in Model 2. The regression model specification was: $CS = \beta_0 + \beta_1(Age) + \beta_2(Income) + \beta_3(Market) + \beta_4(PD) + \beta_5(WA) + \beta_6(VS) + \varepsilon$, where CS = Consumer Satisfaction, PD = Perceived Physical Durability, WA = Warranty Availability, and VS = Visual Similarity. Regression assumptions were tested and satisfied: normality (Shapiro-Wilk, $p > 0.05$), homoscedasticity (Breusch-Pagan, $p = 0.187$), multicollinearity (VIF < 2.0), and independence of errors (Durbin-Watson = 1.94). Ethical approval was obtained from the Katsina State Ministry of Commerce research ethics committee (Approval No: KTC/CM/2026/0142), and verbal informed consent was obtained from all participants.

4. RESULTS AND DISCUSSION

This section presents the analysis of data collected from 430 respondents across seven GSM accessory markets in Katsina metropolis. After data cleaning, 412 questionnaires were deemed valid (95.8% response rate), with 18 excluded due to incomplete responses or inconsistent answering patterns.

4.1 Descriptive Statistics

Table 1 presents the demographic profile of respondents. The sample was predominantly male (69.7%), reflecting the gendered nature of electronics shopping in northern Nigeria where men typically purchase accessories for household devices (Bello & Umar, 2023). The majority (80.1%) were aged 18–35 years, consistent with the demographic most engaged with mobile technology. Nearly half (45.9%) earned below ₦30,000 monthly, confirming the low-income context of Katsina's GSM markets. Kofar Kaura contributed the largest share (28.6%), consistent with its status as the largest electronics hub in Katsina metropolis. Only 37.9% of respondents received any form of informal warranty from vendors, indicating that warranty provision is not standard practice across these markets. Chargers were the most commonly purchased accessory (45.4%), followed by power banks (23.8%), earphones (18.9%), and screen protectors (11.9%).

Table 1: Demographic Characteristics of Respondents (N=412)

Variable	Category	Frequency (n)	Percentage (%)
Gender	Male	287	69.7
	Female	125	30.3
Age Group	18–25 years	156	37.9
	26–35 years	174	42.2
	36–45 years	58	14.1
	46 years and above	24	5.8

Variable	Category	Frequency (n)	Percentage (%)
Education	No formal education	43	10.4
	Primary	67	16.3
	Secondary	156	37.9
	Tertiary	146	35.4
Monthly Income	Below ₦30,000	189	45.9
	₦30,000–50,000	134	32.5
	₦51,000–100,000	67	16.3
	Above ₦100,000	22	5.3
Market Location	Kofar Kaura	118	28.6
	Sabonlayi	78	18.9
	Green House	58	14.1
	Kasuwar Tsaitsaye	48	11.7
	Yar Kutungu	38	9.2
	Continental Computers	38	9.2
	Sabuwar Unguwa	34	8.3
Warranty Received	Yes	156	37.9
	No	256	62.1

Table 2 presents the mean scores for the key study variables. The mean perceived durability score of 2.87 (below the midpoint of 3.0) indicates that consumers generally perceive GSM accessories in Katsina's markets as having low to moderate physical durability. Conversely, visual similarity scored relatively high (mean = 3.64), confirming that many accessories closely mimic original branded products in appearance. Consumer satisfaction averaged 3.12, slightly above neutral, suggesting that despite low durability perceptions, consumers are modestly satisfied-likely due to low price expectations (Ogunleye et al., 2025). Skewness and kurtosis values within ±1 indicated approximately normal distributions.

Table 2: Descriptive Statistics of Study Variables (N=412)

Variable	Mean	SD	Skewness	Kurtosis	Observed Range
Perceived Physical Durability	2.87	0.92	-0.21	-0.45	1–5
Warranty Availability*	0.38	0.49	0.49	-1.76	0–1
Visual Similarity	3.64	0.87	-0.58	0.12	1–5
Consumer Satisfaction	3.12	0.96	-0.33	-0.21	1–5

*Dummy-coded: 0 = no warranty, 1 = warranty offered; mean represents proportion with warranty

Consumer satisfaction varied across markets, with Kofar Kaura (3.45) and Continental Computers (3.39) recording the highest satisfaction, while Sabuwar Unguwa (2.72) recorded the lowest. This variation may be explained by differences in vendor practices, product quality, and warranty availability across locations.

4.2 Correlation Analysis

Table 3 presents the Pearson correlation matrix. Consumer satisfaction demonstrated significant positive correlations with all three independent variables: perceived durability ($r = 0.52$, $p < 0.01$), warranty availability ($r = 0.44$, $p < 0.01$), and visual similarity ($r = 0.28$, $p < 0.01$). The strongest correlation was between durability and satisfaction, suggesting that perceived physical durability may be the most influential predictor. Warranty availability correlated moderately with durability ($r = 0.31$, $p < 0.01$), indicating that vendors offering warranties may also stock physically better-quality products-or that warranties create a halo effect on durability perceptions. All correlations were below 0.70, confirming no multicollinearity concerns (Tabachnick & Fidell, 2019).

Table 3: Pearson Correlation Matrix (N=412)

Variable	1	2	3	4	5	6	7
1. Age	1						
2. Income	0.24**	1					
3. Perceived Durability	0.08	0.11*	1				
4. Warranty Availability	0.05	0.09	0.31**	1			
5. Visual Similarity	-0.03	-0.06	0.19**	0.22**	1		
6. Consumer Satisfaction	0.10*	0.14**	0.52**	0.44**	0.28**	1	
7. Market Location	0.06	0.08	0.12*	0.18**	0.10*	0.21**	1

*Note: *p < 0.05, **p < 0.01 (two-tailed)*

4.3 Regression Analysis and Hypothesis Testing

Hierarchical multiple regression was conducted to test hypotheses H_1–H_4. Table 4 presents the model summary. Model 1, with only control variables (age, income, market location), explained 5.8% of variance in consumer satisfaction ($R^2 = 0.058$). The addition of the three independent variables in Model 2 increased R^2 to 0.462 (Adjusted $R^2 = 0.455$), meaning that perceived durability, warranty availability, and visual similarity collectively explained an additional 40.4% of variance in consumer satisfaction. This represents a large effect size (Cohen's $f^2 = 0.86$), and the F-change was significant ($F(3,405) = 101.26$, $p < 0.001$), supporting H_4 that the three factors jointly have a significant effect on consumer satisfaction.

Table 4: Model Summary

Model	R	R^2	Adjusted R^2	R^2 Change	F Change	df1	df2	Sig. F Change
1 (Controls only)	0.24	0.058	0.051	0.058	8.34	3	408	<0.001
2 (Controls + IVs)	0.68	0.462	0.455	0.404	101.26	3	405	<0.001

The regression model was statistically significant ($F(6,405) = 50.68$, $p < 0.001$), indicating that the independent variables collectively predict consumer satisfaction better than chance.

Table 5 presents the individual coefficients for hypothesis testing. Perceived physical durability had the strongest standardized effect ($\beta = 0.41$, $t = 10.24$, $p < 0.001$). Holding other variables constant, a one-unit increase in perceived durability was associated with a 0.43-unit increase in consumer satisfaction. Thus, **H_1 was supported**. Warranty availability had the second strongest effect ($\beta = 0.29$, $t = 7.68$, $p < 0.001$). Consumers who received any informal warranty reported satisfaction scores 0.56 points higher than those who received no warranty. Thus, **H_2 was supported**. Visual similarity had the weakest but still significant effect ($\beta = 0.16$, $t = 4.22$, $p < 0.001$). Each one-unit increase in visual similarity produced a 0.18-unit increase in satisfaction. Thus, **H_3 was supported**. Control variables (age, income, market location) were not significant in the full model ($p > 0.05$ for all).

Table 5: Regression Coefficients (Model 2)

Variable	Beta (β)	B (Unstd.)	Std. Error	t	p-value	VIF
(Constant)	-	0.87	0.21	4.14	<0.001	-
Age	0.06	0.05	0.03	1.48	0.139	1.08
Income	0.07	0.08	0.04	1.92	0.056	1.05
Market location	0.06	0.04	0.02	1.52	0.129	1.07
Perceived Durability	**0.41**	0.43	0.04	10.24	<0.001	1.18
Warranty Availability	**0.29**	0.56	0.07	7.68	<0.001	1.15

Variable	Beta (β)	B (Unstd.)	Std. Error	t	p-value	VIF
Visual Similarity	**0.16**	0.18	0.04	4.22	<0.001	1.12

*Dependent Variable: Consumer Satisfaction. WA dummy-coded (0=no warranty, 1=warranty offered). Bold indicates $p < 0.001$

4.4 Discussion of Findings

Perceived physical durability as the strongest predictor. The finding that perceived physical durability (β = 0.41) was the strongest predictor of consumer satisfaction is theoretically consistent with Expectation-Confirmation Theory (Oliver, 1997). In low-income contexts where consumers cannot afford to repeatedly replace failed accessories, durability becomes the primary source of post-purchase confirmation. Consumers who perceive their charger as heat-resistant and their power bank as structurally robust develop higher satisfaction because the product meets baseline functional expectations (Okafor & Adebayo, 2022). Notably, the mean durability perception (2.87) was below neutral, yet the relationship remained positive, suggesting that even modest durability improvements would yield significant satisfaction gains. This finding aligns with Adjei and Mensah (2024), who found a similar effect (β = 0.48) in Ghana's informal electronics markets, and extends their work by demonstrating that the effect persists after controlling for warranty and visual similarity.

Warranty availability as a psychological reassurance signal. The second strongest effect (β = 0.29) for warranty availability confirms Signaling Theory (Spence, 1973) in an informal market setting. Even informal 7-day verbal warranties-unenforceable by law-generate satisfaction because they reduce perceived risk at the point of purchase. This aligns with Ibrahim and Suleiman (2024), who found that a 7-day verbal warranty increased satisfaction by approximately 31% in Kano, and with Adekunle et al. (2025), who reported a Cohen's d of 0.71 for warranty effects across northern Nigerian cities. The present study extends their work by isolating the effect within Katsina's specific markets and controlling for product durability perceptions. Importantly, only 37.9% of respondents received any warranty, indicating a market failure: vendors who currently offer no warranty could increase average customer satisfaction by 0.56 points (on a 5-point scale) simply by providing a verbal 7-day exchange offer-a costless intervention since few consumers actually return defective products (Ibrahim & Suleiman, 2024).

Visual similarity: positive but modest effect. The positive but smallest effect (β = 0.16) of visual similarity on satisfaction requires careful interpretation. While the regression coefficient is positive and significant, it is substantially smaller than durability and warranty effects. This suggests that consumers are not simply seduced by appearance; they weigh visual mimicry less heavily than functional attributes. However, the mean visual similarity score (3.64) was notably higher than the mean durability score (2.87), indicating that vendors prioritize making products look authentic over making them last. This is a rational vendor strategy in a market where most purchases are one-time transactions, but it is detrimental to long-term consumer welfare. The finding partially contradicts the experimental results of Ogunleye et al. (2025), who found an inverted-U relationship with satisfaction declining after 70% similarity. The discrepancy may be because their study used hypothetical scenarios without price information; in real Katsina markets, consumers anchor expectations to low prices (~~₦~~500–~~₦~~2,000), which dampens expectation-violation effects. This modest positive effect is consistent with Kim and Lee (2025), who found that visual similarity operates through a halo effect that is bounded by price consciousness in developing economies.

Variation across markets. The descriptive finding that satisfaction varies across markets-with Kofar Kaura (3.45) and Continental Computers (3.39) outperforming Sabuwar Unguwa (2.72)-suggests that market-level factors moderate the relationships studied. Kofar Kaura, being the largest and most competitive market, may have higher warranty provision and better-quality products due to consumer mobility (buyers can easily compare

vendors). Conversely, Sabuwar Unguwa, a smaller peripheral market, may have less competition and thus lower vendor accountability. This environmental variation was partially controlled for in regression (market location was not significant as a control variable), but future research should conduct multi-level analysis to isolate market-level effects.

Theoretical implications. The findings collectively support an integrated framework combining Expectation-Confirmation Theory and Signaling Theory. Durability perceptions represent the "performance" dimension of ECT, while visual similarity represents the "expectation" dimension. Warranty availability acts as an external signal that lowers pre-purchase risk, indirectly improving post-purchase confirmation. The modest effect of visual similarity suggests that consumers in low-income contexts are not naive-they do not fully transfer brand halo from original products to copycats-but they are not entirely immune to visual cues either. This nuanced finding contributes to the growing literature on copycat products in developing economies (Tran & Nguyen, 2025; Zaidi & Rahman, 2024).

Practical implications. For vendors in Katsina's GSM markets, the results are unambiguous: investing in marginally better durability (slightly thicker cables, better thermal management) yields the largest satisfaction return, followed by offering any informal warranty (which costs nothing if few consumers claim it). Visual similarity, while positively associated with satisfaction, is already high (mean 3.64) and yields diminishing returns. For consumers, the findings suggest prioritizing tactile inspection (feeling cable thickness, checking connector firmness) over visual appeal, and preferentially buying from vendors who offer even a short warranty. For regulators, the low warranty coverage (37.9%) across all seven markets indicates a need for a minimum warranty standard-for example, mandating a 7-day exchange policy as a condition for operating a GSM accessory stall.

5. CONCLUSION AND RECOMMENDATIONS

This study examined the combined and individual effects of perceived physical durability, informal warranty availability (7-day vendor guarantee), and visual similarity to original branded products on consumer satisfaction with mobile phone accessories across seven GSM markets in Katsina metropolis, Nigeria. Analysing data from 412 consumers using hierarchical multiple regression, four principal findings emerged.

First, perceived physical durability was the strongest predictor of consumer satisfaction ($\beta = 0.41$, $p < 0.001$), explaining the largest unique variance. Consumers who perceived their accessories as heat-resistant and structurally robust reported significantly higher satisfaction. Second, warranty availability was the second strongest predictor ($\beta = 0.29$, $p < 0.001$). Consumers who received any informal warranty scored satisfaction 0.56 points higher than those who did not. Third, visual similarity to original branded products had a positive but modest effect ($\beta = 0.16$, $p < 0.001$), indicating that visual mimicry matters less than functional durability or warranty reassurance. Fourth, the three factors jointly explained 46.2% of variance in consumer satisfaction (Adjusted $R^2 = 0.455$). Notably, only 37.9% of consumers received any warranty, and satisfaction varied significantly across markets, with Kofar Kaura and Continental Computers outperforming Sabuwar Unguwa.

This study concludes that consumer satisfaction with mobile phone accessories in Katsina's informal GSM markets is shaped predominantly by how durable the product feels to the consumer, followed by whether the vendor offers any form of guarantee, and to a lesser extent by how closely the accessory mimics original branded products. The persistent gap between high visual similarity (mean 3.64) and low perceived durability (mean 2.87) indicates that vendors invest in making products look authentic while neglecting functional quality-a short-term strategy that undermines long-term consumer welfare. The low warranty coverage (62.1% receive no warranty) represents both a market failure and an opportunity, as offering a verbal warranty costs vendors virtually nothing. Theoretically, this study successfully integrates Expectation-Confirmation Theory and Signaling Theory to explain satisfaction in informal electronics markets, demonstrating that durability captures the performance dimension of ECT, visual similarity shapes expectations, and warranty availability acts as a risk-reduction signal.

For consumers. Prioritise tactile inspection over visual appeal by physically testing cable thickness, connector firmness, and weight before purchase. Demand a warranty explicitly-consumers should ask vendors "If

this fails within one week, will you exchange it?"-and preferentially buy from vendors offering even a 3- or 7-day informal guarantee. Avoid overpaying for visual similarity, as accessories that look nearly identical to original brands do not proportionally deliver higher satisfaction.

For vendors. Offer a visible 7-day informal warranty immediately; this study found a 0.56-point satisfaction increase associated with warranty availability with no evidence of frequent claims. Source accessories with demonstrable durability-thicker cables, reinforced connectors, better thermal management-as this yields the largest satisfaction return. Reduce overinvestment in visual mimicry, which is already high (mean 3.64) and yields diminishing returns.

For regulators (NAFDAC, SON, NCC, Katsina State Government). Mandate a minimum informal warranty requiring all GSM accessory vendors in the seven identified markets to display a "7-Day Exchange Policy" notice. Conduct market-specific quality surveillance prioritising markets with lowest satisfaction: Sabuwar Unguwa (2.72), Green House (2.95), and Kasuwar Tsaitsaye (2.98). Launch a consumer education campaign in Hausa and English teaching three simple rules: touch before you buy, ask for warranty, and do not pay extra for fake logos. Establish a voluntary vendor certification programme offering "Quality+Warranty" certification to vendors who commit to traceable sourcing and warranty provision.

For future research. Conduct longitudinal studies tracking consumers over 3–6 months to measure how satisfaction changes after actual product failure. Test nonlinear relationships, as experimental evidence suggests possible diminishing returns after 70% visual similarity. Include actual durability testing combined with consumer surveys to assess the gap between perceived and actual durability. Expand to rural Katsina and neighbouring states (Kano, Zamfara, Jigawa) to test generalisability. Employ multi-level modelling to partition variance between consumer and market levels.

Five limitations should be acknowledged. First, the study relied on self-reported satisfaction and perceived durability, subject to recall and social desirability bias. Second, the cross-sectional design prevents causal inference. Third, the study excluded formal manufacturer warranties entirely. Fourth, generalisability is limited to Katsina metropolis; rural areas and other northern Nigerian cities may have different market dynamics. Fifth, the study did not measure price as a variable; price likely moderates the relationship between visual similarity and satisfaction.

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