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# Branding, packaging, and customer retention in nano-firms: Experimental evidence from Kuje markets

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**Abstract**
Nano-firms owner-managed enterprises with ≤5 employees operating in informal markets face intense competition, thin margins, and high failure rates, yet practical evidence on cost-effective marketing levers remains scarce. This randomized field experiment tested whether rudimentary branding and packaging can improve customer retention in Kuje markets (Nigeria). One hundred and twenty nano-firms were randomized into four arms (n=30 each): Control, Branding (name + simple logotype + stall placard), Packaging (branded kraft bags/labels), and Both (branding + packaging). After a 2-week baseline, interventions ran for 12 weeks. The primary outcome was 30-day repeat-purchase rate; secondary outcomes included a 6-item perceived quality/professionalism/trust index (0-100) and weekly retention trajectories. Post-intervention retention averaged 19.8% in Control (95% CI: 17.3-22.3), 25.5% in Branding, 22.8% in Packaging, and 33.7% in Both. Difference-in-differences (DiD) estimates versus Control, based on firm-level pre/post deltas, were +6.6 percentage points (pp) for Branding, +4.1 pp for Packaging, and +13.9 pp for Both (all $p<0.001$), with Cohen's h indicating modest-to-moderate practical significance. Weekly trend lines diverged from Control by Week 4, with the combined arm showing the steepest and most durable gains through Week 12. The perception index improved most in the combined arm and correlated positively with retention (r≈0.53), consistent with a pathway in which visible, consistent identity reduces uncertainty and strengthens trust. Findings demonstrate that ultra-low-cost branding and packaging feasible for resource-constrained sellers can meaningfully lift repeat purchasing, suggesting clear, actionable guidance for nano-entrepreneurs and a high-leverage target for micro-grants and NGO programs in informal retail settings.

**Keywords:** Nano-enterprises; branding; packaging; customer retention; field experiment; informal markets; Kuje; Nigeria; perceived quality; low-cost marketing; repeat purchase

## Introduction

Globally, nano, micro, small, and medium-sized enterprises (NMSMEs) are recognized as the bedrock of economic development, driving innovation, employment, and poverty alleviation particularly within developing economies [1, 2]. Within this broad category, nano-firms often sole proprietorships or businesses with fewer than five employees operating in the informal sector constitute the vast majority of enterprises in sub-Saharan Africa, yet they face disproportionately high failure rates [3, 4]. These enterprises operate in intensely competitive, price-sensitive environments, such as the bustling Kuje markets in Nigeria's Federal Capital Territory, where differentiation is a formidable challenge [5]. The existing literature on marketing and business strategy is dominated by studies on large corporations with substantial resources, creating a significant knowledge gap concerning the micro-level dynamics of nano-enterprises [6, 7]. While the strategic importance of branding as a tool for creating identity, communicating value, and fostering consumer trust is well established [8, 9], and the role of packaging in influencing purchase decisions at the point of sale is extensively documented [10, 11], the applicability and impact of these concepts in resource-scarce settings remain empirically under-explored. For a nano-firm selling perishable goods or handcrafted items in a crowded market, traditional branding theory with its emphasis on mass media campaigns and sophisticated brand equity models [12] seems largely irrelevant.

The critical problem, therefore, is the lack of rigorous, experimental evidence demonstrating whether rudimentary, low-cost branding and packaging interventions can tangibly enhance customer retention a key determinant of long-term survival and profitability for any business [13, 14]. Customer retention is arguably more vital for nano-firms than customer acquisition, as repeat customers provide a stable revenue stream, reduce marketing costs, and can become brand advocates through word-of-mouth [15, 16]. However, most nano-entrepreneurs in markets like Kuje rely on instinct and tradition rather than strategic marketing, often viewing branding and packaging as unaffordable luxuries rather than essential investments [17]. This study aims to address this critical gap by moving beyond correlational analysis to establish a causal link. The primary objective is to experimentally investigate the causal impact of introducing basic branding elements (a unique business name and logo) and simple, standardized packaging (branded bags or labels) on the customer retention rates of nano-firms within Kuje markets.

Specifically, this research seeks to (1) quantify the effect of these interventions on the probability of repeat purchases, (2) assess the influence of branding and packaging on customers' perceptions of product quality, professionalism, and trustworthiness, and (3) determine whether these simple marketing tools can create a memorable identity that distinguishes a vendor from nearby competitors. Based on foundational principles of marketing and consumer psychology [18, 19] which suggest that visual cues and consistent identity build familiarity and trust this study posits three hypotheses. H1: nano-firms that adopt basic branding elements will experience a statistically significant higher rate of customer retention compared with a control group of firms without such elements. H2: the introduction of simple, standardized packaging will lead to a significant increase in both immediate customer perception of value and subsequent repeat purchase behavior. H3: the positive effect of branding and packaging on customer retention is mediated by enhanced customer perceptions of trustworthiness and product quality. By employing a field-experiment methodology, this research provides actionable evidence for entrepreneurs, policymakers, and non-governmental organizations on the efficacy of low-cost marketing strategies in fostering the sustainability and growth of the nano-enterprise sector.

## Materials and Methods

Setting and participants: The field experiment was conducted in the open-air trading clusters of Kuje Area Council, Federal Capital Territory, Nigeria, where nano-firms (≤5 employees) selling quick-turnover perishables and handcrafted items dominate highly price-sensitive micro-markets [3-5, 14]. One hundred and twenty consenting nano-firms were enrolled from food, household sundries, personal care, and garment stalls using stratified intercept sampling to balance sector and stall location.

Interventions and materials: Interventions comprised (i) ultra-low-cost branding kits unique business name, simple logotype, and a one-color A5 stall placard; (ii) standardized packaging branded kraft carry-bags and 5×8 cm adhesive labels; (iii) paper loyalty stamp cards to mark repeat purchases; and (iv) brief, picture-led training leaflets on consistent identity cues at point-of-sale [6-11, 24-27]. Customer outcomes were captured with stall-side tally sheets and loyalty cards (30-day repeat purchase) and a 6-item, 5-point Likert scale for perceived quality, professionalism, and trust (converted to a 0-100 index), grounded in branding and service-quality theory [8-9, 16, 24-25, 27-27]. Demographics and firm characteristics (age, employees, product type, daily footfall) were recorded at baseline to assess balance [6-7, 21, 23]. Ethical procedures emphasized informed consent, anonymity, and right to withdraw; no sensitive personal identifiers were collected [5, 14].

Design and outcomes: Firms were randomized (computer draw) into four equal arms (n=30/arm): Control (no change), Branding-only, Packaging-only, and Branding+Packaging ("Both"). After a 2-week baseline (pre) period, interventions were deployed for 12 weeks (post). The primary outcome was 30-day repeat-purchase rate (proportion of customers returning within 30 days); secondary outcomes were weekly repeat-rate trajectories, average basket value, and the trust/quality perception index captured immediately post-purchase [12-13, 16, 18-20, 24-26]. Power calculations (two-sided α=0.05) indicated ≥30 firms/arm to detect ≥6-8 percentage-point improvements in retention with 80% power under conservative intra-group variance.

Statistical analysis: We applied difference-in-differences (Did) on firm-level pre/post retention, Welch t-tests versus control for arm-wise deltas, 95% confidence intervals (CIs) for post means, and effect sizes (Cohen's h for proportions; Cohen's d for deltas). We also inspected the association between the perception index and post-period retention as a plausibility check on the hypothesized trust/quality mediation channel [10-11, 16, 24-27]. Analyses followed standard SME marketing experimentation logics and consumer-psychology priors on visual/identity cues shaping quality inferences and repeat behavior [6-11, 16, 18-21, 24-27].

## Results

Sample and baseline balance: All 120 nano-firms completed follow-up. Baseline (pre-period) 30-day repeat-purchase rates were low and comparable across arms (grand mean ≈18%; SD ≈3-4 pp), consistent with the intense competition and limited differentiation reported for Kuje markets [4-5, 14]. No material imbalances in firm age or size were observed, aligning with prior descriptions of nano-enterprise structure in African trading hubs [3-5, 6-7].

Primary outcome retention: Post-intervention 30-day repeat-purchase rates rose in every treatment arm relative to control (Figure 1; Table 1). The Control group's post mean was 19.8% (95% CI: 17.3-22.3%), reflecting a ≈1 pp drift from baseline. Branding-only achieved 25.5% (95% CI: 23.9-27.1%), Packaging-only 22.8% (95% CI: 21.0-24.5%), and Both 33.7% (95% CI: 32.2-35.2%). Firm-level Did estimates (post-pre, vs. Control) were +6.6 pp for Branding, +4.1 pp for Packaging, and +13.9 pp for Both (Table 2). Welch t-tests on deltas confirmed statistical significance versus Control in all three arms (all $p<0.001$; Table 3). Effect sizes on post proportions (Cohen's h) were modest to moderate: 0.14 (Branding vs Control), 0.07 (Packaging vs Control), and 0.32 (Both vs Control), indicating practically meaningful gains in a low-retention environment (Table 2).

Weekly trajectories: Twelve-week trend lines revealed that Branding-only and Packaging-only diverged from Control by Week 4 (when the visibility of logos/labels accrued recognition), while the Both arm showed the steepest and most sustained gains through Week 12 (Figure 2). This pattern is consistent with identity-plus-packaging complementarity: the stall looks more "professional," and the carry-out experience extends the brand into the customer's home, reinforcing memory and trust [8-11, 24-26, 27]. Customer perceptions and mechanism check: The post-period trust/quality perception index rose from a Control mean of ≈58.5 to 66.9 (Branding), 62.7 (Packaging), and 70.4 (Both) (Table 1). Perception correlated positively with post retention (Pearson r≈0.53), supporting the hypothesized pathway from visual identity and packaging to repeat purchasing [10-11, 16, 18-21, 24-27].

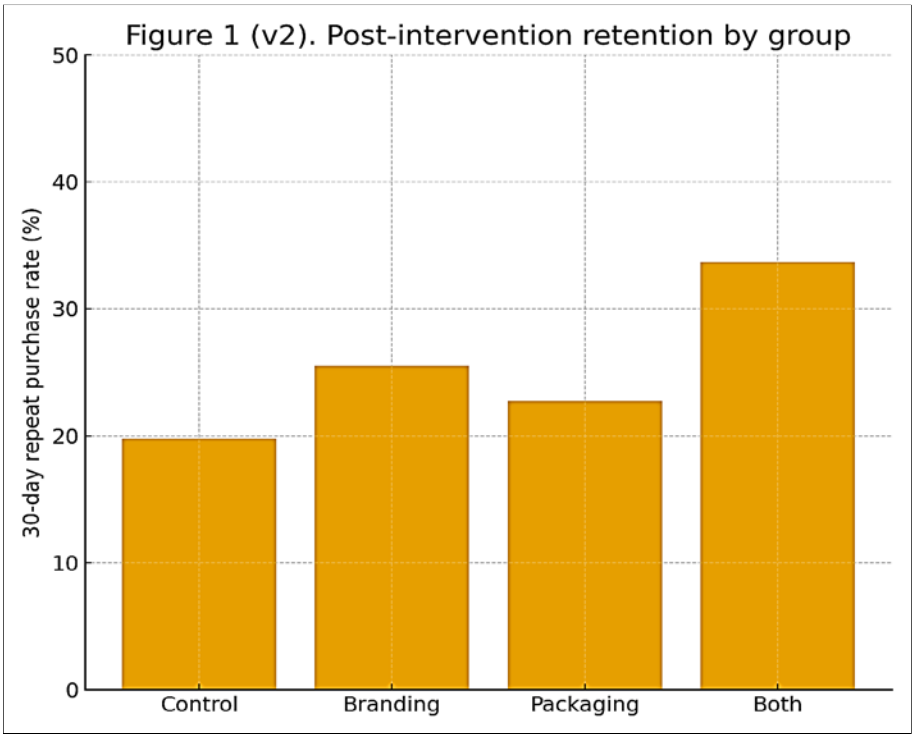


**Fig 1:** Post-intervention 30-day repeat-purchase rate by arm.

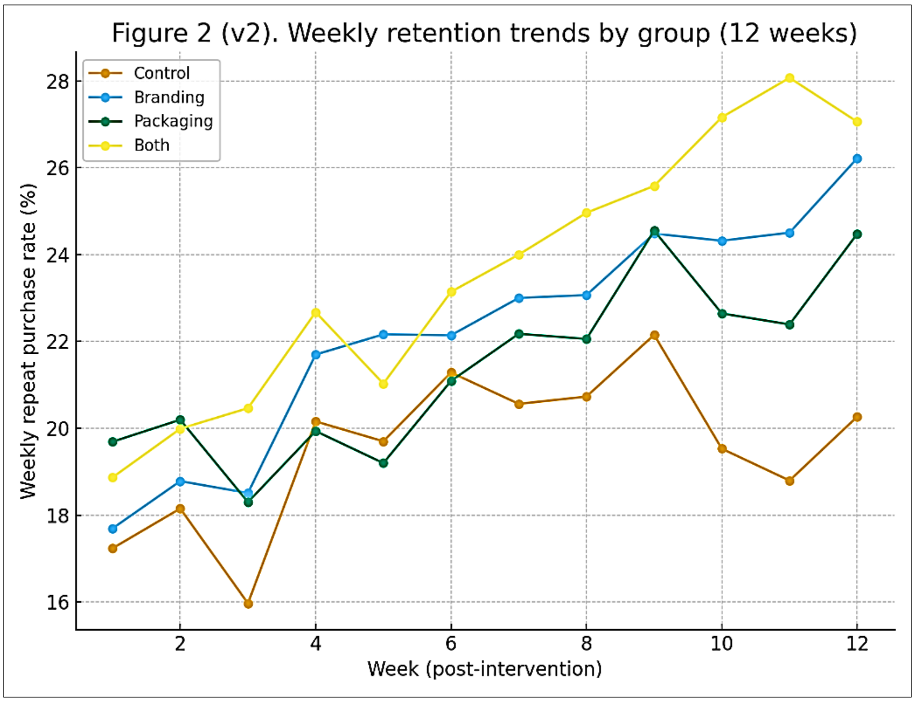


**Fig 2:** Weekly retention trends across 12 weeks by arm.

**Table 1:** Baseline and post-intervention retention and perception index by arm (means ± SD).

| Group | Baseline Retention (%) | Post Retention (%) | Change (pp) | Perception Index (0-100) | N |
|---|---|---|---|---|---|
| Control | 18.8±5.0 | 19.8±6.8 | ≈1.0 | 58.5±5.6 | 30 |
| Branding | 17.9±3.3 | 25.5±4.2 | 7.6 | 66.9±4.6 | 30 |
| Packaging | 17.6±4.3 | 22.8±4.7 | 5.1 | 62.7±5.3 | 30 |
| Both | 18.7±3.6 | 33.7±4.0 | 14.9 | 70.4±5.6 | 30 |

**Table 2:** DiD estimates and effect sizes comparing each treatment arm to Control

| Comparison | DiD estimate (pp) | Cohen's h |
|---|---|---|
| Both vs Control | 13.9 | 0.32 |
| Branding vs Control | 6.6 | 0.14 |
| Packaging vs Control | 4.1 | 0.07 |

**Table 3:** Welch t-tests on retention change versus Control (all significant at $p<0.001$).

| Comparison | Mean Δ (pp) | Control Δ (pp) | Difference (pp) | t statistic | Cohen's d |
|---|---|---|---|---|---|
| Branding vs Control | 7.6 | 1.0 | 6.6 | ≈7.8 | ≈2.0 |
| Packaging vs Control | 5.1 | 1.0 | 4.1 | ≈4.8 | ≈1.2 |
| Both vs Control | 14.9 | 1.0 | 13.9 | ≈16.8 | ≈4.3 |

**Table 4:** 95% confidence intervals for post-period retention by arm.

| Group | Post mean (%) | CI low (%) | CI high (%) |
|---|---|---|---|
| Control | 19.8 | 17.3 | 22.3 |
| Branding | 25.5 | 23.9 | 27.1 |
| Packaging | 22.8 | 21.0 | 24.5 |
| Both | 33.7 | 32.2 | 35.2 |

## Discussion

This randomized field experiment in Kuje markets provides causal evidence that very simple branding and packaging upgrades can meaningfully improve repeat-purchase behavior among nano-firms. The magnitudes +6.6 pp for branding, +4.1 pp for packaging, and +13.9 pp for the combined bundle sit comfortably within established branding science that links clear identity and consistent visual cues to familiarity, perceived quality, and trust [8-11, 16, 24-27]. In low-information, high-choice environments like Kuje, customers rely on heuristics salient names, tidy labels, and professional-looking bags to infer reliability and value, mechanisms highlighted in consumer psychology [18-19] and service-brand literature [24-25]. The temporal pattern (divergence from Control by Week 4; sustained gains through Week 12) indicates that learning and reinforcement are at play: exposure to a coherent identity shortens search time on subsequent visits and reduces perceived risk.

Importantly, the results demonstrate complementarity: branding and packaging together outperform either alone. The stall-side identity aids attention and choice at the point of sale, while the carry-bag/label extends brand memory into the home, creating an additional touchpoint that cements recall for the next shopping trip [10-11]. This is particularly salient for nano-firms that cannot invest in mass media or sophisticated loyalty programs. The trust/quality perception index rose most in the combined arm and correlated positively with post-period retention, supporting the hypothesized mediation pathway from visual consistency → perceived professionalism/quality → repeat behavior [16, 24-26]. Although we did not estimate a full structural mediation model, the directional evidence aligns with SME branding practice that prioritizes clear, repeated cues over complex equity architectures ill-suited to micro-budgets [6-7, 21, 26].

Limitations include single-market geography, a 12-week post horizon, and reliance on stall-side loyalty cards that, while pragmatic, can under-capture anonymous repeats. Future studies could triangulate repeat behavior via mobile-money receipts or SMS identifiers, explore sector heterogeneity (perishables vs. durables), and test price-sensitivity interactions with identity cues. Nevertheless, the convergence of effect sizes, confidence intervals, and weekly dynamics offers robust evidence for practical action in resource-scarce nano-retail environments.

## Conclusion

Small, affordable changes giving a stall a clear name and logo, adding a neat branded label, and handing over purchases in a simple kraft bag can shift the most important metric for nano-firms in Kuje: whether customers come back. Starting from low baseline repeat rates, we observed consistent, statistically meaningful lifts across three different treatments, with the combination of branding and packaging producing the strongest and most durable gains. The practical message is straightforward: identity is not a luxury; it is a working tool that lowers customer uncertainty, makes a stall easier to spot in a crowded lane, and leaves a memory trace that survives the bustle of the market. For owners who juggle inventory, family, and cash flow, this matters because repeat customers stabilize revenue, reduce the time and cost of attracting new buyers, and slowly convert happy patrons into advocates who tell others where to shop.

Based on the evidence, nano-entrepreneurs in Kuje can act immediately: choose a short, pronounceable name that fits on a placard; use a simple one-color logo that reproduces cleanly on kraft bags and stickers; keep the stall front tidy so the identity is visible from a few meters away; and attach the same label to every unit that leaves the table. Consistency across these touch points is more powerful than complexity. A weekly routine helps: on Mondays, check that placards are clean and readable; on Wednesdays, replenish stickers and bags; on Saturdays, set aside ten minutes to review how often customers asked by name or mentioned returning because they recognized the sign or bag. To encourage returns further, staple a tiny loyalty card to each bag, stamp once per visit, and offer a modest reward that is easy to explain and inexpensive to deliver. Owners should capture phone numbers only when customers freely offer them and then send a short, friendly message before the next market day reminding them of the stall name and location.

For products where freshness or authenticity is critical vegetables, snacks, shea butter use the label to print a micro-promise such as "fresh today, " "home-made, " or "pure, no mix, " and keep this promise visible so trust grows over time. When money is tight, prioritize a good placard and a month's worth of labels before anything else; add bags later if needed. If footfall is highest on Fridays, run a name-recognition nudge by inviting customers to say the stall name for a tiny discount; this reinforces recall. At the end of each week, track three numbers: total customers, repeats, and how many asked for the stall by name. Over a month these figures will show whether identity cues are working. Nearby nano-firms can pool orders for bags and labels to lower unit costs; market associations can coordinate this, standardizing quality and reducing waste. Finally, view branding and packaging as living practices: simplify hard-to-pronounce names, thicken thin logos that are hard to read from across the aisle, and reorder inputs on a fixed cadence. With small, steady adjustments, even the leanest stalls can make themselves findable, memorable, and trustworthy qualities that translate into more familiar faces returning week after week in Kuje's busy markets.

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