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A Trial Optimization Framework for FMCG Products Through Experiential Trade Activation

Oluwatosin Balogun ^{1*}, Ololade Shukrah Abass ², Paul Uche Didi ³

¹ Independent Researcher, Lagos, Nigeria

² Independent Researcher, Lagos, Nigeria

³ Independent Researcher, Lagos, Nigeria

Corresponding Author: Oluwatosin Balogun

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Abstract

Fast-Moving Consumer Goods (FMCG) markets are characterized by high competition, low brand loyalty, and rapid consumption cycles, making trial generation a critical lever for brand penetration and growth. This proposes a Trial Optimization Framework that leverages experiential trade activation to maximize consumer trial-to-purchase conversion. Experiential trade activation, encompassing immersive product engagements in retail and high-footfall environments, offers a unique opportunity to stimulate consumer interest, deliver sensory experiences, and capture real-time feedback. The proposed framework integrates consumer profiling, data-driven location targeting, interactive sampling, and promotional conversion tactics, all aligned with specific product categories and shopper missions. Key pillars of the framework include advanced segmentation to identify trial-ready cohorts, the design of tailored experiential formats (e.g., in-store demos, mobile kiosks, and AR-enhanced displays), and the integration of digital touchpoints such as QR codes, couponing, and social sharing mechanisms. Operational enablers such as just-in-

time logistics, activation staff training, and stock availability mapping are embedded to ensure flawless execution. The model also emphasizes continuous optimization through data analytics—using trial conversion rates, engagement metrics, and consumer feedback loops to refine strategies across channels and geographies. By prioritizing trial efficiency and repeat intent, this framework addresses common FMCG trial pain points such as short attention spans, sensory mismatch, and non-aligned retail environments. Additionally, the approach aligns with ethical and regulatory standards, particularly in categories requiring age gating or health and safety protocols. Through real-world case examples and ROI measurement models, the framework demonstrates its potential to reduce trial costs, improve consumer acquisition, and inform broader go-to-market strategies. Ultimately, this trial optimization model offers FMCG marketers a scalable, data-informed, and experiential route to building brand salience, driving conversions, and strengthening category leadership in an increasingly competitive retail landscape.

Keywords: Trial, Optimization Framework, FMCG Products, Experiential, Trade Activation

1. Introduction

In the highly competitive landscape of Fast-Moving Consumer Goods (FMCG), brands must consistently innovate not only in product development but also in consumer engagement strategies (Otokiti, 2019; SHARMA *et al.*, 2019). A critical lever for growth in this sector is trial optimization, which refers to the systematic enhancement of strategies aimed at inducing first-time use of a product by target consumers (Lawal *et al.*, 2014; Amos *et al.*, 2014). Trial optimization in the FMCG context encompasses both the design and execution of initiatives that encourage consumers to sample new or reformulated products and, more importantly, convert these initial engagements into sustained usage (Akinbola and Otokiti, 2012; Otokiti, 2017). This is particularly vital in categories characterized by low switching costs, brand parity, and limited consumer attention spans. The first-time product experience plays a disproportionately influential role in shaping consumer attitudes and subsequent purchase behaviors. In many FMCG categories—such as beverages, snacks, personal care, and household cleaning—consumers often make decisions based on sensory appeal, perceived functional benefits, and emotional resonance (Ajonbadi *et al.*, 2015; Otokiti, 2017). A positive first impression during trial can significantly reduce psychological barriers to purchase and enhance brand recall. Conversely, a poor or indifferent trial experience may reinforce loyalty to incumbent brands or lead to consumer disengagement altogether (Otokiti, 2017; Otokiti and Akorede, 2018). Hence, ensuring that the initial product encounter is both compelling and contextually relevant is a central tenet of effective trial optimization.

In this regard, experiential trade activation has emerged as a powerful method to stimulate consumer trial. Unlike traditional sampling, which often relies on passive distribution mechanisms, experiential activation involves curated, immersive engagements that bring the product to life within physical or hybrid retail environments (Otokiti and Akinbola, 2013; Ajonbadi *et al.*, 2016). These activations may include live demonstrations, sensory sampling, brand storytelling, gamified experiences, or interactions with trained brand ambassadors. By integrating physical stimuli with emotional and cognitive triggers, experiential trade activation increases the memorability of the trial experience and drives higher trial-to-purchase conversion rates (FAGBORE *et al.*, 2020; Nwani *et al.*, 2020).

This proposes a Trial Optimization Framework that positions experiential trade activation as a central executional pillar. The objectives of the framework are threefold: first, to increase trial conversion rates by creating more targeted and impactful consumer engagements; second, to enable robust data capture mechanisms that allow marketers to measure trial effectiveness and consumer sentiment in real-time; and third, to enhance route-to-market efficiency by aligning activation efforts with retail availability, supply chain readiness, and local market dynamics. Through a systematic approach that integrates behavioral science, digital tools, and field operations, the framework seeks to close the gap between consumer exposure and brand adoption in a measurable, repeatable manner.

By grounding trial generation in data-informed experiential design, this approach responds to evolving consumer expectations and the need for deeper emotional brand connections. In an era where retail fragmentation and digital saturation are redefining the path to purchase, trial optimization through experiential trade activation offers FMCG marketers a timely and scalable solution to build product familiarity, drive conversion, and ultimately, accelerate brand growth.

2. Methodology

The systematic review was conducted in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) 2020 guidelines to examine and synthesize evidence on trial optimization strategies for fast-moving consumer goods (FMCG) via experiential trade activation. The goal was to develop a framework that integrates physical consumer engagement with trial measurement precision in retail environments. The protocol was not pre-registered but adhered strictly to the core PRISMA principles of transparency, replicability, and methodological rigor.

Sources were identified through comprehensive electronic searches conducted across Scopus, Web of Science, PubMed, and Google Scholar, covering literature from 2010 to 2024. The search strategy combined terms related to "FMCG trial," "experiential marketing," "trade activation," "retail engagement," "sampling optimization," and "consumer conversion." Grey literature, including industry reports, brand activation case studies, and marketing white papers, was also reviewed to supplement peer-reviewed articles. No language restrictions were applied during the initial screening, but only English-language studies were included in the final review due to translation feasibility constraints. Studies were eligible for inclusion if they reported empirical findings or strategic frameworks on trial mechanisms, in-

store or pop-up activations, shopper behavior analytics, or measurable impact of experiential campaigns on FMCG product uptake. Studies focused solely on digital campaigns without a physical engagement component or those targeting durable goods were excluded. After removal of duplicates, titles and abstracts were screened independently by two reviewers. Discrepancies were resolved through discussion or consultation with a third reviewer. Full texts of potentially relevant articles were assessed for eligibility using a structured form based on the inclusion criteria.

Data extraction was performed using a standardized template capturing key information such as study design, product category, activation format (e.g., in-store demo, branded booth, roadshow), trial metrics (e.g., sample-to-purchase ratio, footfall-to-engagement conversion), and contextual variables (e.g., region, channel type, shopper demographics). Methodological quality and risk of bias were assessed using a modified version of the Mixed Methods Appraisal Tool (MMAT), allowing for evaluation of qualitative case studies alongside quantitative evaluations.

From an initial pool of 1,237 records, 86 full-text articles and reports were reviewed, of which 42 met the inclusion criteria. The synthesis employed a narrative approach, triangulating findings from experimental studies, observational research, and commercial pilot evaluations to identify patterns and effectiveness drivers in experiential trade activation. The main outcome dimensions considered included sensory interaction, brand memorability, trial cost-effectiveness, and immediate versus delayed conversion metrics. Where quantitative data permitted, effect sizes were calculated and visualized using forest plots, although a formal meta-analysis was not feasible due to methodological heterogeneity.

The review highlighted a trend toward hybrid models where experiential sampling is integrated with digital tracking, coupon redemption, and mobile engagement. Successful trial optimization frameworks employed agile deployment, feedback loops from brand ambassadors, and localized tailoring based on store traffic and shopper profiles. Limitations in the reviewed literature included inconsistent reporting of cost-per-trial, lack of longitudinal follow-up, and underreporting of negative or neutral trial outcomes.

Overall, the PRISMA-guided synthesis provided a robust evidence base for designing a trial optimization framework that enhances first-use experience, increases conversion efficiency, and enables FMCG firms to make data-driven trade activation decisions across diverse retail settings.

2.1 Conceptual Foundations

The design and implementation of trial optimization frameworks in fast-moving consumer goods (FMCG) must be grounded in a robust understanding of consumer psychology, marketing theory, and the structural barriers inherent in the retail environment. Three conceptual domains are particularly salient: consumer behavior theories, experiential marketing principles, and the unique challenges associated with FMCG product trials (Olajide *et al.*, 2020; Akinbola *et al.*, 2020). By integrating insights across these dimensions, brands can more effectively deploy trial strategies that move beyond passive exposure toward active engagement and behavioral conversion.

Consumer behavior theories provide a foundational lens through which trial dynamics can be understood. One core construct is *trialability*, a term popularized by Rogers in the Diffusion of Innovations theory. Trialability refers to the

degree to which a product can be experimented with before full adoption, significantly influencing early-stage consumer decision-making. In the FMCG sector, where purchase decisions are frequently habitual and made with minimal deliberation, enabling low-risk product sampling is critical for disrupting established preferences. This aligns with the notion of *perceived value*, which captures consumers' assessment of the trade-off between benefits and costs. For new FMCG products, perceived value can be enhanced through sampling experiences that clearly communicate functional advantages (e.g., better taste, improved nutrition, or superior efficacy). Additionally, *sensory appeal*—including taste, aroma, texture, and visual presentation—plays an outsized role in shaping immediate product impressions. Neuroscientific and behavioral research has demonstrated that multisensory stimuli activate emotional and memory-related brain regions, making sensory-rich trials more memorable and persuasive.

Experiential marketing principles build on this sensory engagement by emphasizing *consumer immersion* and *emotional resonance*. Unlike traditional push marketing tactics, experiential strategies create environments where consumers can interact with products in meaningful and often playful ways. Engagement refers not only to physical interaction—such as tasting a new beverage or applying a skincare product—but also to cognitive and emotional involvement. Immersive experiences are designed to capture attention and sustain interest, often leveraging thematic installations, storytelling, or live brand ambassador demonstrations (Onifade *et al.*, 2021; ODETUNDE *et al.*, 2021). Emotional resonance further enhances trial outcomes by linking product experiences to aspirational values or personal identity (e.g., health-consciousness, indulgence, sustainability). These emotionally charged encounters create memory traces that increase the likelihood of recall and preference at the point of sale, especially in high-competition retail contexts.

However, deploying experiential marketing to support FMCG product trials is not without challenges. One of the most pressing is the *low attention span* of modern consumers. In physical retail settings, shoppers are inundated with visual and promotional stimuli, making it difficult for new products to stand out. Even when a brand secures shelf space, *shelf clutter*—the dense concentration of competing SKUs—can limit visibility and impede trial. This problem is exacerbated by the *low switching incentives* inherent in FMCG categories. Given the typically low price and low perceived risk associated with FMCG purchases, consumers often default to familiar brands, reducing the likelihood of spontaneous switching or experimentation. Moreover, traditional sampling tactics, such as passive giveaways, frequently lack mechanisms for follow-through or feedback, leading to poor conversion and limited data capture.

Addressing these obstacles requires a strategic alignment of behavioral theory, sensory design, and immersive activation. For instance, experiential trials that simulate real-life usage contexts (e.g., tasting stations styled as mini cafés) not only elevate sensory appeal but also frame trialability in ways that reinforce product relevance. Similarly, integrating digital interactivity—such as QR codes linked to brand narratives or loyalty rewards—can enhance perceived value and encourage sustained engagement beyond the moment of trial. Ultimately, the conceptual foundation for FMCG trial optimization lies in recognizing that trial is not merely a

distribution tactic but a behavioral intervention, requiring thoughtful orchestration of psychological cues, sensory experiences, and contextual design to move consumers from awareness to action (ODETUNDE *et al.*, 2021; SHARMA *et al.*, 2021).

2.2 Core Components of the Framework

An effective trial optimization framework in the Fast-Moving Consumer Goods (FMCG) sector requires the systematic integration of market insights, activation design, and behavioral conversion mechanics as shown in figure 1. This explores three core components essential to such a framework: consumer profiling and segmentation, the design of experiential activations, and the establishment of trial-to-purchase pathways (Onifade *et al.*, 2021; Ogeawuchi *et al.*, 2021). Together, these elements provide the strategic backbone for increasing consumer engagement, trial efficiency, and conversion rates.

A fundamental prerequisite for optimizing product trial is the identification of the right consumers at the right moment. Behavioral and psychographic profiling provides insight into consumers' motivations, attitudes, and product preferences. Behavioral data—such as purchase frequency, brand loyalty, and promotion responsiveness—can be derived from loyalty programs, retailer point-of-sale systems, or digital engagement platforms. Psychographic insights add depth, uncovering lifestyle attributes, values, and emotional triggers that shape product receptivity. For instance, health-conscious millennials may respond differently to trial campaigns for functional beverages compared to convenience-driven urban professionals.

Geo-demographic targeting further sharpens deployment precision. Using granular location data, brands can identify high-potential zones—such as high-footfall retail clusters, urban transport hubs, or community events—where trial efforts are more likely to reach consumers within the intended target profile. Demographic overlays (e.g., age, income, household size) enable hyper-localization of activations, ensuring that trial resources are not wasted on low-conversion audiences.

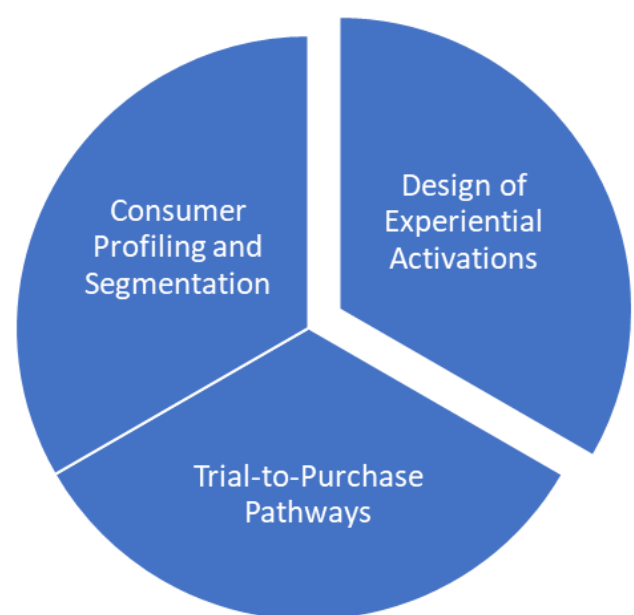


Fig 1: Core Components of the Framework

Shopper missions and consumption occasions provide critical temporal and contextual dimensions. Consumers on routine refill missions may bypass new products, while those on exploratory or occasion-driven missions (e.g., weekend entertaining, gifting) are more open to trial. Mapping activation efforts to relevant occasions—such as cold beverage sampling in hot weather or skincare trials before festive seasons—can significantly enhance trial relevance and effectiveness (Morris, 2018; McDonnell and Wilk, 2020). The design of experiential activations determines how effectively a product engages the consumer during the first encounter. A key distinction lies between in-store and out-of-store activations. In-store activations, such as end-cap sampling or pop-up stations, offer proximity to the point of purchase, enabling immediate conversion. These are particularly effective in grocery, pharmacy, and convenience channels. Out-of-store activations—conducted in parks, festivals, campuses, or transit stations—focus on awareness and engagement, capturing attention in less transactional settings (Olajide *et al.*, 2021; Ojika *et al.*, 2021).

Sensory sampling remains a cornerstone of experiential marketing, especially in categories like food, beverages, and personal care. Allowing consumers to taste, smell, or feel a product creates a multi-sensory memory that enhances perceived quality and brand distinctiveness. For example, fragrance sampling for a new detergent or taste testing for a low-sugar soft drink offers tangible differentiation that cannot be communicated through packaging alone.

Gamification and micro-influencer interactions enrich the activation experience by adding entertainment and social validation. Gamified elements—such as digital spin-to-win wheels, augmented reality (AR) games, or trivia contests—encourage participation and brand interaction. Meanwhile, micro-influencers embedded within communities or lifestyle segments lend credibility and extend the reach of the activation beyond the physical space through social media sharing. Branded experiences, such as mobile lounges or thematic booths, offer immersive brand narratives that go beyond simple product demonstration (Warnaby and Shi, 2018; Freeman and Gambarato, 2019).

Digital integration is a vital enabler for both engagement and measurement. QR code sampling allows consumers to claim product trials digitally, linking physical engagement to CRM databases and follow-up offers. AR-enhanced demos can animate brand storytelling, provide usage instructions, or simulate product benefits in an interactive way (Daraojimba *et al.*, 2021; Ojika *et al.*, 2021). These technologies also serve as bridges between offline trial experiences and online re-engagement, improving data capture and retargeting precision.

To convert trial into purchase, the framework must deploy well-structured trial-to-purchase pathways that lower barriers to purchase and reward conversion. Conversion mechanics such as on-the-spot discounts, buy-one-get-one (BOGO) offers, and limited-time digital coupons create urgency and incentivize immediate buying behavior. When deployed in-store, these offers allow consumers to act on positive trial impressions without friction.

The distinction between assisted and unassisted trials is also critical. Assisted trials—led by trained brand ambassadors—can guide consumers through the product experience, address objections, and emphasize key benefits. These are particularly useful for premium or novel products requiring explanation. Unassisted trials, such as grab-and-go samples

or automated dispensers, are more scalable and cost-effective but may require enhanced packaging communication and follow-up messaging.

Incentivized feedback mechanisms close the loop by transforming consumer trial experiences into actionable data. Simple surveys, rating systems, or social media challenges that reward participation (e.g., discount codes, loyalty points, contest entries) not only boost engagement but also provide insights into product appeal, activation quality, and consumer preferences. This feedback loop is vital for real-time optimization and continuous improvement of future trial campaigns.

The trial optimization framework outlined above emphasizes a strategic and data-informed approach to consumer engagement in FMCG. By leveraging behavioral and contextual profiling, immersive and interactive activation design, and frictionless conversion pathways, FMCG marketers can significantly increase trial effectiveness and brand adoption (Liu *et al.*, 2019; Joseph *et al.*, 2020). The integration of physical and digital components ensures scalability, measurability, and relevance in increasingly fragmented consumer environments. As consumer expectations evolve toward more personalized and meaningful product experiences, such a framework positions brands to maximize return on trial investment and drive sustainable growth in dynamic retail ecosystems (Owobu *et al.*, 2021; Otokiti *et al.*, 2021).

2.3 Data-Driven Optimization Mechanisms

In the dynamic and competitive Fast-Moving Consumer Goods (FMCG) sector, data-driven optimization plays a critical role in maximizing the efficiency, impact, and scalability of product trial campaigns. As experiential trade activations increasingly become a cornerstone of first-time user engagement, the need for precision, agility, and accountability in trial deployment has intensified as shown in figure 2. To that end, data-driven mechanisms—spanning real-time capture, advanced analytics, and continuous experimentation—enable marketers to transition from intuition-led decisions to evidence-based strategy refinements (Alonge *et al.*, 2021; Otokiti *et al.*, 2021). This explores three pivotal pillars of data-driven optimization in FMCG trial activation: real-time data capture, performance metrics, and A/B testing.

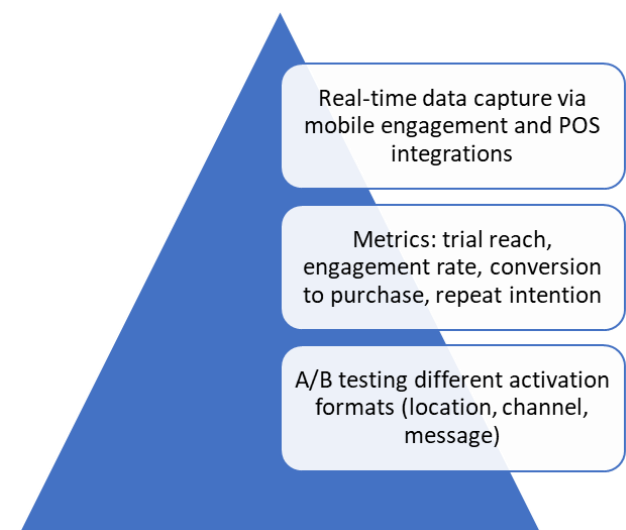


Fig 2: Data-Driven Optimization Mechanisms

The foundation of any data-driven optimization system lies in real-time, high-fidelity data capture. Traditional methods of trial deployment—relying on manual tracking or anecdotal feedback—are no longer sufficient for today’s dynamic retail environments. Mobile engagement technologies offer a scalable and consumer-friendly interface for immediate data collection. QR codes embedded on trial packaging, gamified interactions via branded apps, and SMS-based feedback loops provide avenues for capturing trial engagement as it happens. These digital touchpoints allow for the recording of consumer demographics, activation location, interaction timestamp, and product feedback, all in real-time (Vannucci and Pantano, 2020; Kaila, 2020).

Point-of-sale (POS) integrations complement mobile data by linking trial activities to downstream purchase behavior. When experiential activations are co-located with sales channels (e.g., grocery stores, pharmacies, or convenience outlets), POS data enables the matching of trial participation to actual purchase transactions. This creates a more complete view of consumer behavior—from initial trial exposure to checkout—and enables conversion tracking with transactional precision. Furthermore, integration with loyalty programs or digital wallets enhances the traceability of repeat purchases, thus closing the loop between trial and longer-term adoption (Alonge *et al.*, 2021; Owobu *et al.*, 2021).

Once data is captured, the next step in optimization is the rigorous tracking of key performance metrics. These metrics serve as feedback signals to inform ongoing tactical adjustments and broader strategic evaluations. The first metric—trial reach—quantifies the number of consumers exposed to the activation. It is influenced by footfall volume, activation hours, and distribution scale. High reach is desirable but must be contextualized with deeper engagement indicators.

Engagement rate measures the percentage of reached consumers who actively participated in the trial experience—tasting a sample, scanning a QR code, or participating in a product demonstration. This metric reflects the relevance, design quality, and appeal of the activation format. High engagement suggests effective targeting and compelling experiential design, while low engagement may indicate mismatches between activation content and consumer motivations.

Conversion to purchase is perhaps the most critical performance metric, reflecting the proportion of engaged consumers who go on to buy the product within a defined time window (Perreault and Mosconi, 2018; Saleem *et al.*, 2019). This can be measured through POS systems, coupon redemption, or digital code tracking. Factors influencing conversion include product quality, pricing alignment, and the immediacy of the trial-to-purchase pathway.

Repeat intention captures post-trial consumer sentiment and future purchase likelihood. This can be assessed through digital surveys, social listening, or CRM-integrated feedback tools. A positive repeat intention score indicates strong product fit and satisfaction, which are predictive of long-term

brand loyalty. This metric is particularly important for evaluating the sustainability of trial investments beyond immediate sales spikes (Halliday, 2021; Nwabekee *et al.*, 2021).

To systematically improve trial effectiveness, FMCG brands can deploy A/B testing as an experimental optimization method. By comparing the performance of two or more variations of an activation—while holding other variables constant—marketers can isolate the impact of specific design elements.

One common axis of testing is location. For instance, an FMCG brand may trial a new beverage product in both transit hubs and university campuses. By comparing conversion and engagement rates across these settings, the brand can determine which context is more conducive to trial effectiveness and allocate future resources accordingly.

Channel testing involves evaluating different modes of trial distribution—such as in-store demos, outdoor kiosks, or mobile sampling vans. A/B testing can reveal whether high-engagement formats justify their higher operational costs, or if more passive, lower-cost formats suffice for specific target segments.

Finally, messaging variation—such as testing different value propositions, slogans, or call-to-action formats—can reveal what language or framing resonates most with the audience. For instance, health-oriented messaging may perform better with fitness-conscious consumers, while indulgence-themed messaging may appeal more to weekend shoppers. Insights from these tests can then be looped back into creative development for broader marketing initiatives.

Data-driven optimization mechanisms offer FMCG marketers a powerful toolkit to refine trial activation strategies with scientific precision. Through real-time data capture via mobile and POS systems, rigorous tracking of reach and conversion metrics, and structured A/B testing, brands can transform trial campaigns into scalable, measurable, and repeatable growth engines (Nwabekee *et al.*, 2021). In an environment where consumer preferences are shifting rapidly and retail competition is intensifying, such analytical sophistication is no longer optional—it is essential to winning in the FMCG space.

2.4 Supply Chain and Operational Enablers

The effectiveness of FMCG trial optimization through experiential trade activation hinges not only on consumer-facing strategies but also on a robust and responsive backend infrastructure. Supply chain and operational enablers such as just-in-time sampling logistics, real-time stock availability mapping, standardized staff training, and feedback integration into demand forecasting form the backbone of successful trial execution (Perico *et al.*, 2019; Winkelhaus and Grosse, 2020). These components ensure that product sampling is both timely and aligned with retail dynamics, enabling seamless consumer experiences and actionable business insights as shown in figure 3.

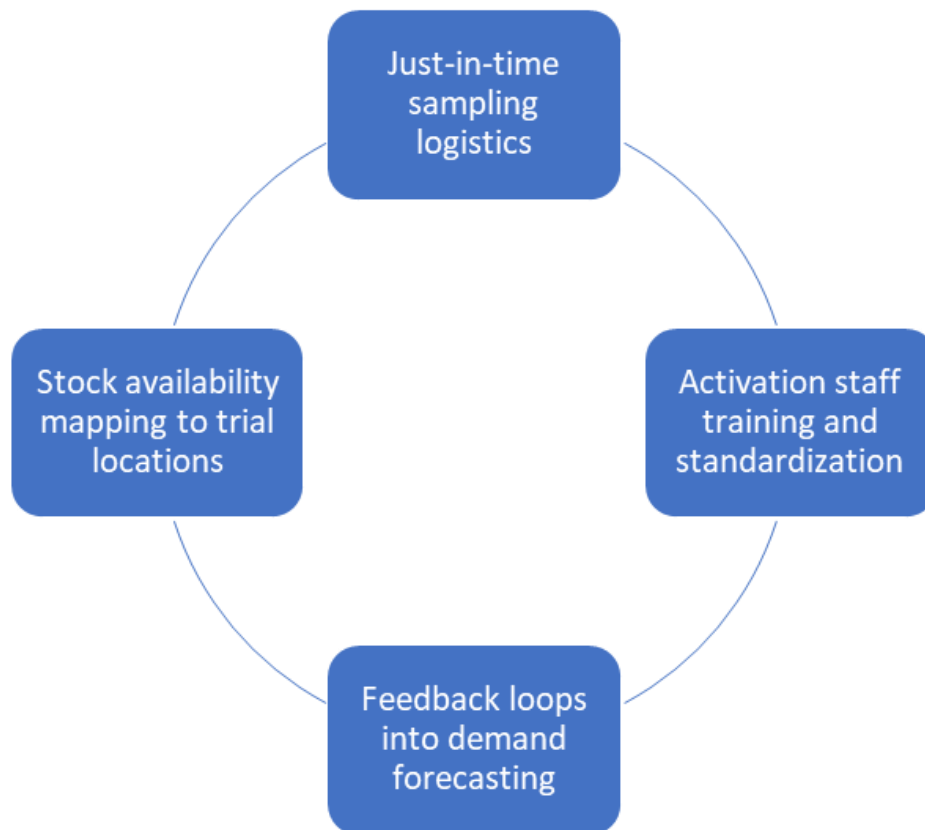


Figure 3: Supply Chain and Operational Enablers

Just-in-time (JIT) sampling logistics is a critical enabler that allows brands to distribute trial units efficiently and responsively. In contrast to bulk distribution models that risk overstocking or spoilage, JIT logistics ensures that sample inventory is delivered to activation sites based on real-time demand and consumption patterns. This approach minimizes waste, reduces storage costs, and increases agility, especially for perishable or trend-sensitive products. Implementation of JIT in FMCG trials requires close coordination between manufacturers, distribution partners, and activation agencies. Technologies such as RFID tagging, GPS-enabled fleet tracking, and mobile inventory dashboards facilitate dynamic adjustments to delivery schedules based on foot traffic data, stock depletion rates, and activation success metrics.

Stock availability mapping is another essential operational element, ensuring that full-sized products are accessible for purchase at or near trial locations. One of the common failures of trial campaigns is the inability to convert interest into purchase due to stockouts or misaligned distribution. Through geo-mapping and POS data integration, brands can identify high-traffic zones, monitor sell-through rates, and synchronize trial activities with retail stock availability. Advanced analytics can layer sales velocity data with demographic and behavioral insights to prioritize high-conversion zones for activation. This creates a seamless path from trial to purchase, reinforcing the consumer experience and avoiding frustration that can arise from product unavailability.

Activation staff training and standardization are fundamental for ensuring consistent trial experiences across multiple locations and markets. Staff deployed for experiential activations serve as the human interface between the brand and the consumer; their knowledge, demeanor, and engagement style significantly influence trial outcomes. Standardized training programs should include product

knowledge, brand storytelling, sensory coaching, and consumer interaction protocols. Using digital platforms and simulation tools, training can be scaled and adapted to local cultural contexts while maintaining brand consistency. In addition, performance metrics such as engagement rates, sample-to-purchase ratios, and consumer sentiment scores can be used to monitor staff effectiveness and incentivize quality execution (Shui and Murthy, 2018; Yoon *et al.*, 2018). *Feedback loops into demand forecasting* serve as a critical feedback mechanism, transforming trial data into strategic foresight. Experiential trial campaigns generate rich real-time data—ranging from sampling uptake and conversion rates to qualitative consumer feedback and geographic response patterns. Feeding this information into demand forecasting systems enables brands to fine-tune production planning, channel allocation, and promotional strategies. For example, strong trial conversion in a specific region might justify increased SKU assortment or secondary placement, while lukewarm feedback may indicate the need for product reformulation or repositioning. Machine learning algorithms can enhance this process by identifying patterns and forecasting demand based on both historical sales and activation-derived signals, improving supply chain responsiveness and reducing out-of-stock or overstock scenarios.

Supply chain and operational enablers are not peripheral but central to the success of FMCG trial strategies. A well-orchestrated backend allows brands to execute high-impact activations that are timely, data-driven, and conversion-oriented. By investing in logistical precision, real-time stock intelligence, human capital development, and closed-loop feedback systems, FMCG firms can maximize the return on experiential marketing investments and drive sustainable product adoption. As competition intensifies and consumer expectations evolve, these enablers will become

indispensable for brands seeking to align operational efficiency with experiential effectiveness.

2.5 Measurement and ROI Modeling

Accurate measurement and return-on-investment (ROI) modeling are essential for evaluating the performance and strategic value of experiential trial activations in the Fast-Moving Consumer Goods (FMCG) sector. As brands increasingly rely on trial campaigns to build awareness, drive first-time usage, and stimulate repeat purchases, robust analytical frameworks are required to quantify outcomes, justify investments, and inform future allocation of resources (Ascarza *et al.*, 2018). This examines key dimensions of measurement and ROI modeling, including trial uplift vs. baseline sales, cost-per-trial and cost-per-acquisition benchmarking, consumer lifetime value (CLV) estimation, and attribution modeling across in-store and digital trial channels.

A foundational measure of trial campaign effectiveness is trial uplift, which quantifies the incremental increase in product sales attributable to the activation effort, relative to a pre-defined baseline. Baseline sales are typically established using historical data from equivalent time periods, control locations without activation, or predictive models adjusting for seasonality and promotional activity.

For instance, if a personal care product sells 500 units per store per week in the absence of activation and records 750 units per store during an activation week, the trial uplift is 50%. This uplift must then be evaluated for statistical significance and compared to uplift in control areas to confirm causality. Such comparisons can be enhanced using experimental designs, including matched test-control stores, geo-lift models, or synthetic control methods. Establishing credible uplift metrics helps isolate the impact of trial from confounding variables such as pricing promotions or competitor activity.

To assess financial efficiency, cost-per-trial (CPT) and cost-per-acquisition (CPA) are crucial metrics. CPT refers to the total activation cost divided by the number of consumers who experienced the product. It includes expenses related to staffing, sampling materials, logistics, retail partnerships, and technology integration. CPA, on the other hand, calculates the cost per consumer who not only tries the product but also proceeds to purchase.

For example, if a campaign costs \$100,000 and delivers 20,000 unique product trials, the CPT is \$5. If 5,000 of those individuals make a purchase, the CPA is \$20. Benchmarking these figures across categories, channels, and campaign types allows marketers to identify underperforming formats and reallocate budgets more effectively. Moreover, these metrics enable head-to-head comparisons with alternative marketing tactics such as digital ads or couponing, guiding investment decisions across the broader promotional mix (Tur *et al.*, 2019; Hamilton *et al.*, 2020).

Understanding the consumer lifetime value (CLV) of trial-induced purchasers is essential for assessing the long-term impact of trial campaigns. CLV estimates the net revenue a brand expects to earn from a newly acquired customer over their entire relationship with the brand, factoring in repeat purchases, cross-sell potential, and churn probability.

In practice, post-trial CLV is estimated by tracking repeat purchase behavior through loyalty card data, digital redemptions, or subscription analytics. For instance, if 30% of trial participants repurchase within 30 days and generate

an average margin of \$8 per month over a 12-month retention period, their CLV would be \$96. This value can be compared against the CPA to determine profitability. A CLV-to-CPA ratio greater than 3:1 is generally considered favorable, indicating that the trial investment is generating strong financial returns.

Segment-level CLV analysis—by demographics, trial channel, or location—also allows for granular optimization. High-CLV segments can be prioritized in future activations, while low-CLV segments may warrant alternative approaches or messaging.

One of the more complex challenges in trial ROI modeling is accurate attribution—determining which activation touchpoint or channel was responsible for driving trial and subsequent conversion. This is particularly relevant as FMCG brands increasingly blend physical and digital elements in their trial strategies.

In-store activations offer immediate, observable trials but face limitations in post-trial tracking without digital integration. Conversely, digital-triggered trials—such as QR code redemptions or app-based sampling—offer richer behavioral data but may have lower engagement in offline-dominated segments. Attribution models, such as multi-touch attribution (MTA) and last-touch attribution, can be used to assign weighted credit to multiple touchpoints in the consumer journey (Kumar *et al.*, 2020; Fernández, 2020).

For example, a consumer may interact with a product via a social media ad, attend a live in-store sampling event, and finally redeem a digital coupon online. MTA models distribute value across each interaction based on historical conversion rates, enabling more accurate ROI comparisons between in-store and digital-triggered trials. Geo-location and device ID matching further enhance attribution precision by linking offline behavior with online responses.

Measurement and ROI modeling form the analytical backbone of FMCG trial optimization. By quantifying trial uplift, benchmarking financial efficiency through CPT and CPA, projecting CLV, and applying rigorous attribution models, brands can transform trial campaigns from one-off events into predictable growth engines. These metrics not only justify budget allocations but also guide future design, targeting, and scaling decisions. In an increasingly complex retail landscape—where digital and physical experiences intertwine—data-driven ROI frameworks are essential for sustaining competitive advantage and maximizing the lifetime value of each consumer trial.

2.6 Ethical and Regulatory Considerations

The design and execution of FMCG product trials through experiential trade activation must be underpinned by rigorous ethical and regulatory frameworks, especially as consumer interactions become increasingly personalized and data-driven. In contexts involving sensitive product categories or close physical engagement—such as sampling alcohol, nicotine alternatives, or food—companies must navigate age restrictions, data privacy legislation, and health and safety protocols (Hollands *et al.*, 2019; Bhatnagar *et al.*, 2019). These considerations are critical not only for regulatory compliance but also for protecting consumer welfare and preserving brand integrity.

A central ethical concern involves *age-restricted product trials*, particularly in categories such as alcoholic beverages, tobacco harm reduction products, and energy stimulants. Regulatory agencies across jurisdictions have established

strict guidelines to limit the exposure of minors to such substances, including restrictions on advertising, sampling, and public engagement. During experiential activations, ensuring age-appropriate access is both a legal requirement and a public health imperative. Brands must implement robust age-verification mechanisms, ranging from government-issued ID checks to biometric or digital authentication where legally permissible. Staff must be rigorously trained in identifying underage participants and denying access without compromising the dignity or rights of individuals. Furthermore, activations should be strategically located in adult-dominated environments—such as festivals, lounges, or select retail zones—and avoid family-oriented venues where inadvertent exposure could occur. Failure to enforce age restrictions not only carries legal risks but also damages public trust and invites scrutiny from regulators and advocacy groups.

Another vital regulatory dimension involves *data privacy*, particularly as experiential trials increasingly rely on digital engagement, feedback loops, and behavioral tracking. Collection of consumer data—such as demographic profiles, purchase intent, facial expressions, or survey responses—must adhere to data protection laws like the General Data Protection Regulation (GDPR) in Europe, the California Consumer Privacy Act (CCPA) in the United States, and equivalent frameworks globally. Informed consent must be obtained before data capture, with clear explanations of the purpose, scope, and duration of data use. Anonymization techniques should be applied where possible to minimize the risk of personal identification, and data access should be restricted to authorized personnel. Additionally, consumers should be granted the right to opt-out, delete, or review their data, in line with legal provisions. Ethical data governance also extends to third-party vendors—such as activation agencies or analytics providers—who must be contractually bound to uphold equivalent standards (Klar, 2020; Gasser *et al.*, 2020). In an era where consumer trust is increasingly tied to data transparency, respecting privacy rights is not merely a compliance issue but a competitive differentiator.

Finally, *health and safety considerations* are paramount in experiential activations, particularly those involving food, beverages, personal care products, or physical touchpoints. Ensuring hygienic handling and safe sensory engagement is both a regulatory mandate and a consumer expectation, especially in the post-pandemic landscape where concerns over contamination remain heightened. Sampling staff must follow established protocols, including the use of gloves, hairnets, and sterilized utensils when applicable. Products should be stored and served at appropriate temperatures, and allergen information must be clearly communicated. For cosmetics and skincare items, single-use samples or disposable applicators should be provided to prevent cross-contamination. Risk assessments should be conducted prior to activation to identify potential hazards—such as foodborne illness, allergic reactions, or product misuse—and mitigation strategies must be embedded into operational workflows. In regions with strict consumer safety laws, such as the U.S. Food and Drug Administration (FDA) or the European Food Safety Authority (EFSA), non-compliance can result in severe financial and reputational penalties.

Ethical and regulatory considerations are not peripheral constraints but integral components of responsible FMCG trial design. Age verification, data privacy, and health and safety protocols must be proactively addressed at the

planning stage and rigorously enforced during execution. Doing so not only ensures compliance with legal standards but also reinforces consumer confidence, brand reputation, and long-term viability in competitive and scrutinized markets. As experiential marketing continues to evolve, embedding ethical foresight into operational practice will be essential for building trust and ensuring sustainable engagement (Olayinka, 2019; Boppiniti, 2019).

3. Conclusion and Future Outlook

The optimization of product trials through experiential trade activation represents a strategic evolution in how fast-moving consumer goods (FMCG) companies engage shoppers in dynamic, cluttered retail environments. Grounded in behavioral science and enabled by operational precision, experiential activation moves beyond conventional sampling by offering immersive, data-rich engagements that not only stimulate initial product use but also support long-term brand affinity. The integrated framework—spanning trialability, sensory appeal, just-in-time logistics, and demand feedback loops—provides a scalable pathway to increase conversion efficiency, deepen consumer understanding, and align retail partnerships for mutual benefit.

The benefits of this approach are multi-fold. First, experiential activations deliver *deeper consumer insight* by capturing real-time behavioral and attitudinal data at the moment of trial. Unlike traditional surveys or passive sales data, these interactions provide contextually rich information on product preferences, sensory feedback, emotional reactions, and perceived value, allowing marketers to iterate and localize with precision. Second, the framework improves *trial return on investment (ROI)* by maximizing sample-to-purchase ratios and reducing wastage through targeted deployment, agile inventory planning, and informed staff deployment. Third, it fosters *stronger alignment with retail partners*, who increasingly demand marketing solutions that drive footfall, increase basket size, and support category innovation. Experiential trials can be tailored to retail formats—from supermarkets and pharmacies to convenience stores and events—ensuring synergy between shopper experience and retail outcomes.

Looking ahead, several trends are set to reshape the landscape of FMCG trial optimization. One such trend is the rise of *AI-powered trial prediction models*, which leverage machine learning to forecast trial success based on historical performance, demographics, product attributes, and environmental variables. These tools enable brands to simulate campaign outcomes, optimize trial locations, and allocate resources with greater confidence. Another emerging innovation is *virtual sampling*, where consumers interact with digital twins of products via augmented reality (AR), gamified experiences, or sensory emulation technologies. Although physical sampling remains vital for sensory categories like food and cosmetics, virtual trial methods offer scalability, accessibility, and contactless appeal—especially relevant in post-pandemic retail environments. Additionally, there is a growing emphasis on *sustainability in sampling kits*. Environmentally conscious consumers and retailers are increasingly scrutinizing single-use plastics, excessive packaging, and carbon-intensive logistics. Brands are responding with compostable sample units, minimalist packaging, and carbon-offset activations that align with broader ESG (Environmental, Social, and Governance) goals.

Given these benefits and opportunities, there is a clear imperative for FMCG companies to *integrate experiential activation into their broader go-to-market strategies*. Trial should not be viewed as a standalone promotional event but as a strategic touchpoint within the consumer journey—connected to brand storytelling, product innovation feedback loops, digital engagement, and loyalty ecosystems. This requires cross-functional coordination among marketing, supply chain, R&D, and retail teams, supported by shared metrics and real-time data integration.

Experiential trade activation offers FMCG brands a powerful means to transform trial into a high-impact, insight-generating, and sustainable engine for growth. By embracing evolving technologies, embedding ethical and operational rigor, and aligning activation with long-term brand objectives, companies can build deeper relationships with consumers and retailers alike. The future of product trial is not only interactive—it is intelligent, immersive, and indispensable to competitive success in the modern FMCG marketplace.

4. References

1. Ajonbadi HA, Otokiti BO, Adebayo P. The efficacy of planning on organisational performance in the Nigeria SMEs. *Eur J Bus Manag*. 2016;24(3):25-47.
2. Ajonbadi HA, Aboaba Mojeed-Sanni B, Otokiti BO. Sustaining competitive advantage in medium-sized enterprises (MEs) through employee social interaction and helping behaviours. *J Small Bus Entrep*. 2015;3(2):1-16.
3. Akinbola OA, Otokiti BO. Effects of lease options as a source of finance on profitability performance of small and medium enterprises (SMEs) in Lagos State, Nigeria. *Int J Econ Dev Res Invest*. 2012;3(3):70-6.
4. Akinbola OA, Otokiti BO, Akinbola OS, Sanni SA. Nexus of born global entrepreneurship firms and economic development in Nigeria. *Ekonomicko-manazerske Spektrum*. 2020;14(1):52-64.
5. Alonge EO, Eyo-Udo NL, Chibunna B, Ubanadu AID, Balogun ED, Ogunsola KO. Digital transformation in retail banking to enhance customer experience and profitability. *Iconic Res Eng J*. 2021;4(9).
6. Alonge EO, Eyo-Udo NL, Ubanadu BC, Daraojimba AI, Balogun ED, Ogunsola KO. Enhancing data security with machine learning: A study on fraud detection algorithms. *J Data Secur Fraud Prev*. 2021;7(2):105-18.
7. Amos AO, Adeniyi AO, Oluwatosin OB. Market based capabilities and results: inference for telecommunication service businesses in Nigeria. *Eur Sci J*. 2014;10(7).
8. Ascarza E, Neslin SA, Netzer O, Anderson Z, Fader PS, Gupta S, *et al*. In pursuit of enhanced customer retention management: Review, key issues, and future directions. *Cust Needs Solut*. 2018;5(1):65-81.
9. Bhatnagar A, Whitsel LP, Blaha MJ, Huffman MD, Krishan-Sarin S, Maa J, *et al*. New and emerging tobacco products and the nicotine endgame: the role of robust regulation and comprehensive tobacco control and prevention: a presidential advisory from the American Heart Association. *Circulation*. 2019;139(19):e937-e958.
10. Boppiniti ST. Machine learning for predictive analytics: Enhancing data-driven decision-making across industries. *Int J Sustain Dev Comput Sci*. 2019;1(3):13.
11. Daraojimba AI, Ubamadu BC, Ojika FU, Owobu O, Abieba OA, Esan OJ. Optimizing AI models for crossfunctional collaboration: A framework for improving product roadmap execution in agile teams. *IRE J*. 2021;5(1):14.
12. Du RY, Xu L, Wilbur KC. Immediate responses of online brand search and price search to TV ads. *J Mark*. 2019;83(4):81-100.
13. Fagbore OO, Ogeawuchi JC, Ilori O, Isibor NJ, Odetunde A, Adekunle BI. Developing a Conceptual Framework for Financial Data Validation in Private Equity Fund Operations. 2020.
14. Fernández L. Applications of Multi-Touch Attribution Modelling. 2020.
15. Freeman M, Gambarato RR, editors. *The Routledge companion to transmedia studies*. New York: Routledge; 2019.
16. Gasser U, Ienca M, Scheibner J, Sleight J, Vayena E. Digital tools against COVID-19: taxonomy, ethical challenges, and navigation aid. *Lancet Digit Health*. 2020;2(8):e425-e434.
17. Halliday NN. Assessment of Major Air Pollutants, Impact on Air Quality and Health Impacts on Residents: Case Study of Cardiovascular Diseases [master's thesis]. Cincinnati: University of Cincinnati; 2021.
18. Hamilton SF, Liaukonyte J, Richards TJ. Pricing strategies of food retailers. *Annu Rev Resour Econ*. 2020;12(1):87-110.
19. Hollands GJ, Carter P, Anwer S, King SE, Jebb SA, Ogilvie D, *et al*. Altering the availability or proximity of food, alcohol, and tobacco products to change their selection and consumption. *Cochrane Database Syst Rev*. 2019;(9).
20. Joseph A, Browning MH, Jiang S. Using immersive virtual environments (IVEs) to conduct environmental design research: A primer and decision framework. *HERD*. 2020;13(3):11-25.
21. Kaila S. How can businesses leverage data analytics to influence consumer purchase journey at various digital touchpoints? *J Psychosoc Res*. 2020;15(2).
22. Klar M. Binding effects of the European general data protection regulation (GDPR) on US companies. *Hastings Sci Tech LJ*. 2020;11:101.
23. Kumar S, Gupta G, Prasad R, Chatterjee A, Vig L, Shroff G. Camta: Causal attention model for multi-touch attribution. In: 2020 International Conference on Data Mining Workshops (ICDMW); 2020. p. 79-86.
24. Lawal AA, Ajonbadi HA, Otokiti BO. Leadership and organisational performance in the Nigeria small and medium enterprises (SMEs). *Am J Bus Econ Manag*. 2014;2(5):121.
25. Liu R, Hannum M, Simons CT. Using immersive technologies to explore the effects of congruent and incongruent contextual cues on context recall, product evaluation time, and preference and liking during consumer hedonic testing. *Food Res Int*. 2019;117:19-29.
26. McDonnell E, Wilk R. Critical approaches to superfoods. 2020.
27. Morris C. Impact of product name and seasonal context on the sensory evaluation of a seasonally themed beverage. *J Sens Stud*. 2018;33(2):e12320.
28. Nwabekee US, Aniebonam EE, Elumilade OO, Ogunsola OY. Integrating digital marketing strategies with financial performance metrics to drive profitability

- across competitive market sectors. 2021.
29. Nwabekee US, Aniebonam EE, Elumilade OO, Ogunsola OY. Predictive Model for Enhancing Long-Term Customer Relationships and Profitability in Retail and Service-Based. 2021.
 30. Nwani S, Abiola-Adams O, Otokiti BO, Ogeawuchi JC. Building operational readiness assessment models for micro, small, and medium enterprises seeking government-backed financing. *J Front Multidiscip Res*. 2020;1(1):38-43.
 31. Odetunde A, Adekunle BI, Ogeawuchi JC. A Systems Approach to Managing Financial Compliance and External Auditor Relationships in Growing Enterprises. 2021.
 32. Odetunde A, Adekunle BI, Ogeawuchi JC. Developing Integrated Internal Control and Audit Systems for Insurance and Banking Sector Compliance Assurance. 2021.
 33. Ogeawuchi JC, Uzoka AC, Abayomi AA, Agboola OA, Gbenle TP, Ajayi OO. Innovations in Data Modeling and Transformation for Scalable Business Intelligence on Modern Cloud Platforms. *Iconic Res Eng J*. 2021;5(5):406-15.
 34. Ojika FU, Owobu O, Abieba OA, Esan OJ, Daraojimba AI, Ubamadu BC. A conceptual framework for AI-driven digital transformation: Leveraging NLP and machine learning for enhanced data flow in retail operations. *IRE J*. 2021;4(9).
 35. Ojika FU, Owobu WO, Abieba OA, Esan OJ, Ubamadu BC, Ifesinachi A. Optimizing AI Models for Cross-Functional Collaboration: A Framework for Improving Product Roadmap Execution in Agile Teams. 2021.
 36. Olajide JO, Otokiti BO, Nwani S, Ogunmokun AS, Adekunle BI, Fiemotongha JE. A strategic model for reducing days-on-hand (DOH) through logistics and procurement synchronization. *IRE J*. 2021;4(1).
 37. Olajide JO, Otokiti BO, Nwani S, Ogunmokun AS, Adekunle BI, Fiemotongha JE. Designing a financial planning framework for managing SLOB and write-off risk in fast-moving consumer goods (FMCG). *IRE J*. 2020;4(4).
 38. Olayinka OH. Leveraging predictive analytics and machine learning for strategic business decision-making and competitive advantage. *Int J Comput Appl Technol Res*. 2019;8(12):473-86.
 39. Onifade AY, Ogeawuchi JC, Abayomi AA, Agboola OA, George OO. Advances in Multi-Channel Attribution Modeling for Enhancing Marketing ROI in Emerging Economies. *Iconic Res Eng J*. 2021;5(6):360-76.
 40. Onifade AY, Ogeawuchi JC, Abayomi AA, Agboola OA, Dosumu RE, George OO. A conceptual framework for integrating customer intelligence into regional market expansion strategies. *Iconic Res Eng J*. 2021;5(2):189-94.
 41. Otokiti BO, Akinbola OA. Effects of lease options on the organizational growth of small and medium enterprise (SME's) in Lagos State, Nigeria. *Asian J Bus Manag Sci*. 2013;3(4):1-12.
 42. Otokiti BO, Akorede AF. Advancing sustainability through change and innovation: A co-evolutionary perspective. In: *Innovation: Taking creativity to the market. Book of Readings in Honour of Professor SO Otokiti*. 2018;1(1):161-7.
 43. Otokiti BO, Onalaja AE. The role of strategic brand positioning in driving business growth and competitive advantage. *Iconic Res Eng J*. 2021;4(9):151-68.
 44. Otokiti BO. Mode of entry of multinational corporation and their performance in the Nigeria market [doctoral dissertation]. Ota: Covenant University; 2012.
 45. Otokiti BO. A study of management practices and organisational performance of selected MNCs in emerging market-A Case of Nigeria. *Int J Bus Manag Invent*. 2017;6(6):1-7.
 46. Otokiti BO. Social media and business growth of women entrepreneurs in Ilorin metropolis. *Int J Entrep Bus Manag*. 2017;1(2):50-65.
 47. Otokiti BO, Igwe AN, Ewim CPM, Ibeh AI. Developing a framework for leveraging social media as a strategic tool for growth in Nigerian women entrepreneurs. *Int J Multidiscip Res Growth Eval*. 2021;2(1):597-607.
 48. Owobu WO, Abieba OA, Gbenle P, Onoja JP, Daraojimba AI, Adepoju AH, *et al*. Review of enterprise communication security architectures for improving confidentiality, integrity, and availability in digital workflows. *IRE J*. 2021;5(5):370-2.
 49. Owobu WO, Abieba OA, Gbenle P, Onoja JP, Daraojimba AI, Adepoju AH, *et al*. Modelling an effective unified communications infrastructure to enhance operational continuity across distributed work environments. *IRE J*. 2021;4(12):369-71.
 50. Perico P, Arica E, Powell DJ, Gaiardelli P. MES as an Enabler of Lean Manufacturing. *IFAC-PapersOnLine*. 2019;52(13):48-53.
 51. Perreault MC, Mosconi E. Social media engagement: Content strategy and metrics research opportunities. 2018.
 52. Saleem H, Uddin MKS, Habib-ur-Rehman S, Saleem S, Aslam AM. Strategic data driven approach to improve conversion rates and sales performance of e-commerce websites. *Int J Sci Eng Res*. 2019;10(4):588-93.
 53. Sharma A, Adekunle BI, Ogeawuchi JC, Abayomi AA, Onifade O. Governance Challenges in Cross-Border Fintech Operations: Policy, Compliance, and Cyber Risk Management in the Digital Age. 2021.
 54. Sharma A, Adekunle BI, Ogeawuchi JC, Abayomi AA, Onifade O. IoT-enabled Predictive Maintenance for Mechanical Systems: Innovations in Real-time Monitoring and Operational Excellence. 2019.
 55. Shui J, Murthy S. FHFA STAFF WORKING PAPER SERIES. 2018.
 56. Tur C, Kalincik T, Oh J, Sormani MP, Tintoré M, Butzkueven H, *et al*. Head-to-head drug comparisons in multiple sclerosis: Urgent action needed. *Neurology*. 2019;93(18):793-809.
 57. Vannucci V, Pantano E. Digital or human touchpoints? Insights from consumer-facing in-store services. *Inf Technol People*. 2020;33(1):296-310.
 58. Warnaby G, Shi C. Pop-up retailing: Managerial and strategic perspectives. Heidelberg: Springer; 2018. p. 11-23.
 59. Winkelhaus S, Grosse EH. Logistics 4.0: a systematic review towards a new logistics system. *Int J Prod Res*. 2020;58(1):18-43.
 60. Yoon G, Li C, Ji Y, North M, Hong C, Liu J. Attracting comments: Digital engagement metrics on Facebook and financial performance. *J Advert*. 2018;47(1):24-37.