



Retail Chain Mobile Modernization

Professional Technology Consulting

The Origami Corporation

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From Abandoned App to Revenue Engine: Replatforming a Retail Mobile Experience for 85 Stores

1.1

Executive Summary

A national retail chain with 85 brick-and-mortar locations faced a critical challenge: an outdated mobile app that most customers abandoned after a single use. We partnered with the client to redesign the end-to-end user experience, rebuild the app natively for iOS and Android, and integrate real-time inventory across all stores. The new experience delivered personalized shopping, seamless checkout, and reliable store-level availability. Within eight months of launch, the app achieved a 4.8-star average rating, drove a 300% increase in mobile orders, and grew to account for 35% of total company revenue.

Our engagement combined mobile-development, ui-ux-design, business-intelligence, qa-testing, and digital-marketing to deliver measurable business impact and a scalable platform for continued growth.

1.2

The Challenge

The client’s legacy app suffered from multiple issues that eroded customer trust and throttled growth:

- Poor UX and navigation: Key paths (browse, search, checkout) required too many steps, with inconsistent patterns and limited accessibility features.
- Stale product data: Inventory was batch-updated once daily, leading to out-of-stock surprises at checkout and in-store pickup.
- Limited personalization: The app treated all users the same—no tailored recommendations, local offers, or loyalty integrations.
- Performance and stability problems: Slow startup times and

frequent crashes contributed to abandonment after first use. - Analytics gaps: Minimal event tracking and no unified view of customer behavior hindered optimization. - Fragmented systems: POS, ERP, ecommerce, and loyalty platforms operated in silos, complicating omnichannel scenarios like buy-online-pickup-in-store (BOPIS).

The client needed a modern, high-performance mobile experience that improved conversion, retention, and omnichannel engagement while integrating with existing core systems without disrupting operations across 85 locations.

1.3 Our Approach

We took a holistic, outcome-driven approach that aligned product strategy, design, engineering, analytics, and go-to-market: - Product discovery and UX research: Heuristic audit, customer interviews, and in-store observations to map friction points across browse, search, and fulfillment flows. - Experience redesign: A unified information architecture and interaction model focused on speed to value—personalized home, localized inventory, and a streamlined checkout. - Native rebuild: Separate iOS (Swift) and Android (Kotlin) codebases to optimize performance, leverage platform conventions, and unlock Apple Pay/Google Pay. - Real-time data foundation: A lightweight, event-driven inventory service that reconciled store-level stock and exposed a single source of truth via APIs. - Business intelligence and experimentation: A robust event taxonomy, CDP integration, and executive dashboards for cohort, funnel, and merchandising insights—with controlled A/B testing for rapid iteration. - Quality-first delivery: Test automation, device matrix coverage, and phased rollouts to ensure stability, accessibility, and performance. - Full-funnel marketing: App Store Optimization (ASO), lifecycle messaging, and targeted campaigns to drive adoption, engagement, and reviews.

1.4 Implementation

UI/UX Design - Research to requirements: We translated insights into measurable requirements—reduce time-to-product view, shorten checkout steps, and surface store availability earlier. - Design system: A mobile-first design system with reusable components, WCAG 2.1 AA contrast and touch targets, and platform-specific patterns (e.g., bottom navigation on Android, tab bars on iOS). - Key flows: - Personalized home: Dynamic modules for “Recommended for You,” “Back in Stock,” and “Local Deals,” informed by browsing history and store selection. - Intelligent search: Autocomplete, typo tolerance, and faceted filtering; barcode scanning for quick add-to-cart in-store. - Omnichannel checkout: Support for delivery, BOPIS, and curbside pickup; loyalty and offers applied contextually; Apple Pay/Google Pay and card-on-file.

Mobile Development - iOS: Swift with UIKit and Combine; modular architecture (feature modules with dependency inversion); SQLite caching for offline browsing; background sync for wishlists and carts. - Android: Kotlin with Jetpack components (Navigation, Room, ViewModel) and Coroutines; repository pattern for clean data access; WorkManager for resilient background tasks. - Performance: Cold start under 2 seconds on mid-tier devices; image optimization with adaptive caching and lazy loading; 95th percentile API latency under 300 ms for critical endpoints. - Security: OAuth 2.0 and PKCE for authentication; encrypted local storage for tokens; certificate pinning for sensitive calls.

Real-Time Inventory Integration - Data pipeline: Change Data Capture (CDC) from store POS/ERP flows into a central inventory service via an event stream; deduplication and reconciliation to maintain consistency across 85 stores. - APIs: A single GraphQL endpoint for product, pricing, and availability, backed by a distributed cache (e.g., Redis) to keep reads low-latency while reflecting near-real-time updates. - Client updates: Subscriptions for back-in-stock alerts and pickup readiness; graceful handling of edge cases (e.g., last-unit conflicts) with optimistic UI and server-side confirmation.

Business Intelligence - Event schema: Standardized naming and payloads for view, click, search, add-to-cart, checkout, and fulfillment events; server and client correlation IDs for end-to-end tracing. - CDP and warehouse: Events streamed to a CDP and cloud data warehouse; data models feeding dashboards for daily active users (DAU), conversion funnels, and BOPIS adoption by region. - Personalization: An initial rules-based engine (RFM segmentation, affinity tags) augmented with a lightweight collaborative filtering model for recommendations, served by a stateless microservice.

QA Testing - Automation: Unit tests at the module level, integration tests for API contracts, and UI automation (XCTest, Espresso) covering happy and edge-path scenarios. - Device lab: Matrix testing across screen sizes, OS versions, and network conditions; accessibility audits with VoiceOver/TalkBack. - Release strategy: Feature flags and remote config for safe rollouts; TestFlight/Play phased releases; observability via crash analytics and performance monitoring.

Digital Marketing and Launch - ASO: Keyword optimization, localized screenshots, and video previews; ratings prompts tied to successful outcomes (e.g., after order confirmation). - Lifecycle messaging: Push and email campaigns for onboarding, abandoned carts, and back-in-stock alerts; deep links into personalized sections. - Paid and owned: Lookalike audiences based on high-LTV cohorts; promo codes auto-applied via deep links; in-app messaging for seasonal events and store openings.

1.5 Results & Impact

The replatformed app quickly outperformed the legacy experience across core KPIs:

- Revenue contribution: Mobile accounted for 35% of total company revenue within 8 months, establishing the app as a primary sales channel.
- Order growth: Mobile orders increased by 300%, driven by improved product discovery, accurate availability, and a frictionless checkout.
- Customer satisfaction: The app earned a 4.8-star average rating in the App Store and Google Play, with reviews citing speed, reliability, and accurate store inventory.
- Conversion and retention: Conversion rates rose markedly, with fewer abandonments at checkout and higher repeat purchase rates supported by personalized recommendations and BOPIS convenience.
- Operational efficiency: Real-time inventory reduced customer support contacts related to out-of-stock cancellations and decreased manual stock checks for associates.
- Reliability: Post-launch monitoring showed a high crash-free session rate and stable performance across device tiers, enabling faster release cadences and continuous optimization.

The business also gained a robust analytics foundation, enabling weekly experimentation and data-driven merchandising decisions. Store managers can now view localized demand signals (e.g., popular items by region) and adjust promotions accordingly.

1.6 Technologies & Services Used

- Mobile Development
 - iOS: Swift, UIKit, Combine, SQLite/GRDB, XCUITest, Fastlane
 - Android: Kotlin, Jetpack (Navigation, Room, ViewModel), Coroutines, Espresso, Gradle CI
 - Apple Pay, Google Pay, deep links, push notifications (APNs/FCM)
- UI/UX Design
 - User research, task analysis, and journey mapping
 - Design system, interactive prototypes, WCAG 2.1 AA accessibility standards
- Business Intelligence
 - Event taxonomy, CDP integration, cloud data warehouse
 - Executive dashboards for cohorts, funnels, LTV, and merchandising insights
 - Rules-based segmentation and collaborative filtering for recommendations
- QA Testing

- Test automation (unit, integration, UI), device matrix coverage
- Performance and accessibility testing, phased rollouts, observability
- Digital Marketing
 - ASO, ratings and reviews strategy
 - Lifecycle messaging (push, email, in-app), deep-link campaigns
 - Paid acquisition with LTV-based audience targeting and attribution

1.7 Conclusion

By unifying thoughtful UI/UX design with high-performance native development, real-time data integration, robust analytics, and a disciplined QA and marketing strategy, we transformed a stagnant mobile presence into a major revenue driver. The app now delivers a personalized, reliable shopping experience that reflects live store availability, supports omnichannel fulfillment, and scales with demand across 85 locations.

Beyond the headline outcomes—a 4.8-star rating, 300% increase in mobile orders, and 35% of total revenue—the client now has a flexible platform and data foundation to continue innovating. Next steps include expanding personalization models, enhancing associate workflows for faster pickup, and integrating in-store beacons for richer “in-aisle” experiences. This engagement demonstrates how a cross-functional approach to mobile-development, ui-ux-design, business-intelligence, qa-testing, and digital-marketing can unlock meaningful, sustained business impact.

About The Origami Corporation

The Origami Corporation is a leading technology consulting firm specializing in cloud migration, DevSecOps, cybersecurity, and digital transformation. We help organizations navigate complex technological challenges and achieve their business objectives through innovative, secure, and scalable solutions.

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