Mobile App Development Milestones - Carbon Cube Kenya

Platform: Android & iOS **Timeline:** 3 Months **Framework:** React Native **Start Date:**

Table of Contents

Month 1: Foundation & Core Setup

Week 1-2: Project Initiation & Architecture

Project Setup & Environment

- [ ] Initialize React Native project (TypeScript template)
- [ ] Configure development environment
  - [ ] Android Studio setup (Android SDK, emulators)
  - [ ] Xcode setup (iOS Simulator, CocoaPods)
  - [ ] Node.js and npm/yarn configuration
- [ ] Set up Git repository and branching strategy
- [ ] Configure CI/CD pipeline (GitHub Actions / Bitrise)
- [ ] Set up code quality tools (ESLint, Prettier, Husky)

Project Structure

- [ ] Create folder structure

```
/src
  /components
```

```
/screens
/navigation
/services
/hooks
/store
/utils
/types
/constants
```

- [ ] Set up absolute imports (path aliases)

- [ ] Configure environment variables (.env files)

- [ ] Set up TypeScript configuration

Core Architecture

- [ ] API client setup (Axios with interceptors)
  - [ ] Base URL configuration
  - [ ] Request/Response interceptors
  - [ ] Error handling
  - [ ] Token refresh logic
- [ ] State management setup (Zustand)
  - [ ] Auth store
  - [ ] User store
  - [ ] App state store
- [ ] Navigation setup (React Navigation)
  - [ ] Stack navigator
  - [ ] Tab navigator
  - [ ] Drawer navigator (if needed)
  - [ ] Deep linking configuration
- [ ]

Design system foundation

☐

Color palette

☐

Typography system

☐

Spacing system

☐

Component library setup (React Native Paper / NativeBase)

Deliverables

- Working React Native project
- Development environment ready
- Basic navigation structure
- API client configured
- State management setup

Week 3-4: Authentication & Onboarding

Authentication Implementation

☐

Login screen

☐

Email/Phone input

☐

Password input

☐

"Remember me" functionality

☐

Form validation

☐

Error handling

☐

Registration screen

☐

User type selection (Buyer/Seller)

☐

Email/Phone registration

☐

Password strength indicator

☐

Terms & Conditions acceptance

☐

OAuth integration

☐

- [ ] Google Sign-In setup
  - [ ] iOS Google Sign-In configuration
  - [ ] Android Google Sign-In configuration
- [ ] OTP verification flow
  - [ ] OTP input screen
  - [ ] Resend OTP functionality
  - [ ] Auto-verify (if possible)
  - [ ] Timer countdown
- [ ] Password reset flow
  - [ ] Request OTP screen
  - [ ] Verify OTP screen
  - [ ] Reset password screen
- [ ] Token management
  - [ ] Secure storage (React Native Keychain / SecureStore)
  - [ ] Token refresh mechanism
  - [ ] Auto-logout on token expiry

Onboarding

- [ ] Onboarding screens (3-4 screens)
  - [ ] Welcome screen
  - [ ] Features overview
  - [ ] User type selection
- [ ] First-time user experience
- [ ] Skip onboarding option

User Profile Setup

☐

   Profile creation screen (Buyer)

☐

   Profile creation screen (Seller)

☐

   Profile image upload

☐

   Basic information form

☐

   Location selection (Kenyan counties)

Deep Linking

☐

   Configure deep links

☐

   Email verification links

☐

   Password reset links

☐

   OAuth callback handling

Deliverables

- Complete authentication flow
- OAuth integration working
- Onboarding experience
- User profile setup
- Deep linking configured

Month 2: Core Features Development

Week 5-6: Buyer Core Features

Home Screen

☐

   Home screen layout

☐

   Search bar

☐

   Category grid/slider

☐

   Featured listings carousel

☐

- [ ] Recent listings section
- [ ] Special offers banner
- [ ] Pull-to-refresh
- [ ] Infinite scroll for listings

Listing Browsing

- [ ] Ad/Listing list view
  - [ ] Grid view option
  - [ ] List view option
  - [ ] Image lazy loading
  - [ ] Skeleton loaders
- [ ] Ad detail page
  - [ ] Image gallery with zoom
  - [ ] Image carousel/swiper
  - [ ] Product information
  - [ ] Seller information card
  - [ ] Contact seller button
  - [ ] Share functionality
  - [ ] Save to wishlist
- [ ] Category browsing
  - [ ] Category list
  - [ ] Subcategory navigation
  - [ ] Category-based filtering

Search & Filters

- [ ]

Search functionality

- [ ] Search input with suggestions
- [ ] Search results screen
- [ ] Recent searches
- [ ] Popular searches

- [ ] Advanced filters
- [ ] Price range filter
- [ ] Location filter
- [ ] Category filter
- [ ] Sort options (price, date, relevance)
- [ ] Apply/Reset filters

Wishlist

- [ ] Wishlist screen
- [ ] Add/Remove from wishlist
- [ ] Wishlist count badge
- [ ] Quick actions (contact seller, remove)

Seller Profile/Shop

- [ ] Seller profile page
- [ ] Seller information
- [ ] Seller's listings grid
- [ ] Seller reviews
- [ ] Contact seller button
- [ ] Shop page view

Image Handling

☐ Image caching (React Native Fast Image)

☐ Image optimization

☐ Placeholder images

☐ Error handling for failed images

Deliverables

- Complete buyer browsing experience
- Search and filter functionality
- Wishlist feature
- Image optimization

Week 7-8: Seller Core Features

Seller Dashboard

☐ Dashboard screen

    ☐ Statistics cards (views, messages, listings)

    ☐ Recent activity

    ☐ Quick actions

    ☐ Current tier display

☐ Analytics overview

    ☐ Views chart

    ☐ Messages chart

    ☐ Listing performance

Ad Management

☐ Ad creation screen

    ☐ Multi-step form

- [ ] Title and description
- [ ] Category selection
- [ ] Price input
- [ ] Location selection
- [ ] Multiple image upload
- [ ] Image reordering
- [ ] Preview before publish
- [ ] Ad editing screen
  - [ ] Edit existing ad
  - [ ] Update images
  - [ ] Change status (active/inactive)
- [ ] Ad list (My Listings)
  - [ ] Active listings
  - [ ] Inactive listings
  - [ ] Draft listings
  - [ ] Quick actions (edit, delete, activate)
- [ ] Ad deletion
  - [ ] Confirmation dialog
  - [ ] Soft delete option

Image Upload

- [ ] Image picker integration
  - [ ] Camera capture
  - [ ] Gallery selection
  - [ ]

- [ ] Multiple image selection

- [ ] Image compression

- [ ] Upload progress indicator

- [ ] Image preview before upload

- [ ] Image deletion

Seller Profile Management

- [ ] Profile edit screen
  - [ ] Business information
  - [ ] Contact details
  - [ ] Profile picture
  - [ ] Business description
- [ ] Document upload (if needed)
- [ ] Profile verification status

Tier Management (View Only)

- [ ] Current tier display
  - [ ] Tier name and benefits
  - [ ] Expiration date
  - [ ] Usage statistics
- [ ] Tier comparison (preview)
- [ ] Upgrade prompt (navigate to upgrade screen)

Review Management

- [ ] Reviews list
- [ ] Review details

☐ Reply to reviews

☐ Review statistics

Deliverables

- Complete seller dashboard
- Ad CRUD operations
- Image upload system
- Profile management

Week 9-10: Messaging & Communication

Real-time Messaging

☐ ActionCable integration

☐ WebSocket connection setup

☐ Connection management

☐ Reconnection logic

☐ Authentication with JWT token

☐ Conversations list

☐ List of all conversations

☐ Unread message indicators

☐ Last message preview

☐ Timestamp display

☐ Search conversations

☐ Chat interface

☐ Message list

☐ Message bubbles (sent/received)

☐ Timestamp for messages

☐

- [ ] Message status (sent, delivered, read)
- [ ] Input field with send button
- [ ] Image sharing in messages
- [ ] Image preview in chat
- [ ] Typing indicators (optional)
- [ ] Message actions
  - [ ] Mark as read
  - [ ] Delete conversation
  - [ ] Block user (if applicable)

Push Notifications

- [ ] Firebase Cloud Messaging setup
  - [ ] Android FCM configuration
  - [ ] iOS APNs configuration
- [ ] Notification handling
  - [ ] Foreground notifications
  - [ ] Background notifications
  - [ ] Notification tap actions
  - [ ] Notification badges
- [ ] Notification preferences
  - [ ] Enable/disable notifications
  - [ ] Notification types (messages, updates)

Contact Seller Flow

- [ ] "Contact Seller" button on ad detail
- [ ]

☐ Create new conversation

☐ Pre-filled message (optional)

☐ Navigate to chat screen

Deliverables

- Real-time messaging working
- Push notifications configured
- Complete chat experience

Month 3: Tier Upgrades & Launch

Week 11-12: Tier Management & Payments

Tier Management

☐ Tier listing screen

☐ All available tiers

☐ Tier comparison table

☐ Benefits per tier

☐ Pricing information

☐ Current tier screen

☐ Current tier details

☐ Expiration countdown

☐ Usage statistics

☐ Benefits breakdown

☐ Tier upgrade flow

☐ Select tier screen

☐ Select pricing plan (monthly/yearly)

☐ Review and confirm

☐

Payment method selection

M-Pesa Payment Integration

- [ ] M-Pesa SDK integration
  - [ ] Android M-Pesa SDK
  - [ ] iOS M-Pesa SDK (or web-based)
- [ ] STK Push implementation
  - [ ] Initiate payment
  - [ ] Payment request screen
  - [ ] Phone number input
  - [ ] Payment confirmation
- [ ] Payment status tracking
  - [ ] Polling for payment status
  - [ ] Payment success screen
  - [ ] Payment failure handling
  - [ ] Retry payment option
- [ ] Manual payment option
  - [ ] Payment instructions screen
  - [ ] Paybill number display
  - [ ] Account number display
  - [ ] Manual verification flow
- [ ] Payment history
  - [ ] List of all payments
  - [ ] Payment details
  - [ ] Receipt download (if available)

Payment Edge Cases

- ☐ Prevent duplicate payments
- ☐ Handle expired payments
- ☐ Payment timeout handling
- ☐ Network error handling
- ☐ Payment verification

Deliverables

- Complete tier upgrade flow
- M-Pesa payment integration
- Payment status tracking
- Payment history

Week 13-14: Reviews, Offers & Polish

Review System

- ☐ Review listing screen
  - ☐ Reviews for a listing
  - ☐ Reviews for a seller
  - ☐ Rating display
  - ☐ Review text
  - ☐ Review images (if applicable)
- ☐ Submit review screen
  - ☐ Rating selection (stars)
  - ☐ Review text input
  - ☐ Image upload (optional)
  - ☐ Submit review
- ☐

Seller reply to reviews

☐ Reply input

☐ Submit reply

☐ Review statistics

☐ Average rating

☐ Rating distribution

Offers & Promotions

☐ Offers listing screen

☐ Active offers

☐ Featured offers

☐ Flash sales

☐ Upcoming offers

☐ Offer detail screen

☐ Offer information

☐ Participating listings

☐ Countdown timer

☐ Offer notifications

☐ New offer alerts

☐ Flash sale alerts

Profile & Settings

☐ Profile screen

☐ User information

☐ Profile picture

☐

- [ ] Edit profile button
- [ ] Settings screen
  - [ ] Account settings
  - [ ] Notification settings
  - [ ] Privacy settings
  - [ ] Language settings (if applicable)
  - [ ] About section
  - [ ] Help & Support
  - [ ] Terms & Conditions
  - [ ] Privacy Policy
  - [ ] Logout option

Additional Features

- [ ] About Us screen
- [ ] FAQ screen
- [ ] Contact Us screen
- [ ] Help center
- [ ] App version display
- [ ] Rate app prompt (optional)

UI/UX Polish

- [ ] Loading states
- [ ] Error states
- [ ] Empty states
- [ ] Skeleton loaders
- [ ]

☐ Smooth animations

☐ Consistent spacing

Accessibility improvements

Deliverables

- Complete review system
- Offers display
- Settings and profile
- Polished UI/UX

Week 15-16: Testing, Optimization & Launch

Testing

☐ Unit testing

  ☐ Critical functions

  ☐ Utility functions

  ☐ State management

☐ Integration testing

  ☐ API integration

  ☐ Navigation flows

  ☐ Payment flows

☐ UI/UX testing

  ☐ Screen flow testing

  ☐ Device compatibility

  ☐ Screen size testing

☐ Performance testing

  ☐ App startup time

  ☐ Image loading performance

- [ ] Memory usage
- [ ] Battery usage
- [ ] Security testing
  - [ ] Token storage security
  - [ ] API security
  - [ ] Data encryption

Bug Fixes

- [ ] Critical bugs
- [ ] High priority bugs
- [ ] Medium priority bugs
- [ ] UI/UX improvements

Performance Optimization

- [ ] Image optimization
  - [ ] Image compression
  - [ ] Lazy loading
  - [ ] Caching strategy
- [ ] Code optimization
  - [ ] Bundle size optimization
  - [ ] Remove unused dependencies
  - [ ] Code splitting
- [ ] Network optimization
  - [ ] Request batching
  - [ ] Caching strategies

- [ ] Offline support (basic)

App Store Preparation

- [ ] App icons
  - [ ] iOS app icon (all sizes)
  - [ ] Android app icon (all sizes)
- [ ] Screenshots
  - [ ] iOS screenshots (all device sizes)
  - [ ] Android screenshots (all device sizes)
- [ ] App Store listings
  - [ ] App name
  - [ ] App description
  - [ ] Keywords
  - [ ] Privacy policy URL
  - [ ] Support URL
- [ ] App metadata
  - [ ] Version number
  - [ ] Build number
  - [ ] Release notes

Beta Testing

- [ ] Internal testing
  - [ ] TestFlight setup (iOS)
  - [ ] Internal testing track (Android)
  - [ ] Test user onboarding

- [ ] Beta feedback collection
  - [ ] Feedback form
  - [ ] Bug reporting
  - [ ] User surveys
- [ ] Beta fixes
  - [ ] Address critical issues
  - [ ] Implement feedback

App Store Submission

- [ ] iOS App Store
  - [ ] App Store Connect setup
  - [ ] Build upload
  - [ ] App review submission
  - [ ] Compliance checks
- [ ] Google Play Store
  - [ ] Google Play Console setup
  - [ ] Build upload
  - [ ] App review submission
  - [ ] Compliance checks

Launch Preparation

- [ ] Production environment setup
- [ ] API endpoints verification
- [ ] Monitoring setup
  - [ ] Crash reporting (Sentry)

☐ Analytics (Firebase Analytics / Mixpanel)

☐ Performance monitoring

☐ Launch checklist

☐ Rollback plan

Post-Launch

☐ Monitor app performance

☐ Monitor crash reports

☐ Monitor user feedback

☐ Hotfix deployment process

☐ Support team training

Deliverables

- Fully tested app
- Optimized performance
- App store submissions
- Production deployment
- Monitoring in place

Key Deliverables Summary

Month 1

- Working React Native project
- Complete authentication system
- Onboarding experience
- API integration layer
- Design system foundation

Month 2

- Complete buyer browsing experience
- Complete seller management system
- Real-time messaging
- Image upload and management

Month 3

- Tier upgrade payment system
- Review system
- Complete feature set
- Production-ready apps
- App store submissions

Technical Stack

Core

- **Framework:** React Native (latest stable)
- **Language:** TypeScript
- **State Management:** Zustand
- **Navigation:** React Navigation v6
- **API Client:** Fetch
- **Data Fetching:** TanStack Query (React Query)

Real-time

- **WebSocket:** @rails/actioncable or react-native-actioncable
- **Push Notifications:** React Native Firebase (FCM/APNs)

UI/UX

- **Component Library:** React Native Paper or NativeBase
- **Animations:** React Native Reanimated
- **Images:** React Native Fast Image
- **Icons:** React Native Vector Icons

Payments

- **M-Pesa:** Custom M-Pesa SDK integration or react-native-mpesa

Storage

- **Secure Storage:** React Native Keychain (iOS) / React Native Keychain (Android)
- **Async Storage:** @react-native-async-storage/async-storage

Development Tools

- **Linting:** ESLint
- **Formatting:** Prettier
- **Git Hooks:** Husky
- **Testing:** Jest + React Native Testing Library

Monitoring & Analytics

- **Crash Reporting:** Sentry

- **Analytics:** Firebase Analytics or Mixpanel
- **Performance:** React Native Performance Monitor

Risk Management

High Priority Risks

1. **M-Pesa Integration Complexity**

   - **Risk:** M-Pesa SDK integration may take longer than expected
   - **Mitigation:** Start M-Pesa integration early, have fallback manual payment option
   - **Contingency:** Use web-based M-Pesa integration if native SDK fails

2. **ActionCable WebSocket Issues**

   - **Risk:** WebSocket connections may be unstable on mobile
   - **Mitigation:** Implement robust reconnection logic, fallback to polling
   - **Contingency:** Use HTTP polling as backup

3. **App Store Review Delays**

   - **Risk:** App store review may take 1-2 weeks
   - **Mitigation:** Submit early, ensure compliance, have all documentation ready
   - **Contingency:** Plan for potential delays in launch date

4. **Image Upload Performance**

   - **Risk:** Large images may cause performance issues
   - **Mitigation:** Implement image compression, optimize upload process
   - **Contingency:** Reduce max image size or number of images

5. **Timeline Pressure**

   - **Risk:** 3 months is tight for full feature set
   - **Mitigation:** Prioritize core features, defer nice-to-haves
   - **Contingency:** Consider phased launch (MVP first, then enhancements)

Medium Priority Risks

1. **Device Compatibility Issues**

   - **Risk:** App may not work on all devices
   - **Mitigation:** Test on multiple devices early, set minimum OS versions

2. **API Performance**

   - **Risk:** Backend API may not handle mobile load well
   - **Mitigation:** Implement caching, optimize API calls, coordinate with backend team

3. **Third-party Dependencies**

   - **Risk:** Key libraries may have issues or be deprecated
   - **Mitigation:** Use well-maintained libraries, have alternatives ready

---

Success Metrics

Technical Metrics

- App crash rate < 1%
- App startup time < 3 seconds
- API response time < 2 seconds
- Image load time < 1 second

User Metrics

- User registration completion rate > 70%
- Daily active users (target to be set)
- Message response rate (target to be set)
- Tier upgrade conversion rate (target to be set)

Notes

- Regular weekly reviews and adjustments may be needed
- Some features may be moved to post-launch based on priorities
- Regular testing on real devices is crucial

Document Version: 1.0 **Last Updated:** 14th November 2025 **Status:** Planning Phase