Software Test Report

E-Commerce Mobile Application "ShopNow" v2.1.3

Document ID: TR-2025-042

Date of Report: April 8, 2025

**Prepared by:** Dejan Majkic

Version: 1.0

Executive Summary

This report presents the results of comprehensive testing conducted on the ShopNow e-commerce mobile application version 2.1.3 from March 18 to April 7, 2025. The testing focused on validating new features, verifying bug fixes, ensuring performance across various conditions, and confirming compatibility across platforms.

Key Findings:

- All critical and high-severity issues have been addressed except for one high-severity wishlist synchronization issue with a planned hotfix

- Core functionality performs well across all tested platforms with 94.6% test case pass rate

- New features (payment gateway integrations, recommendation engine) function as specified

- Minor performance concerns exist on older Android (v10) devices (affecting ~8% of users)

Recommendation: The QA team recommends proceeding with release, with a phased rollout plan and immediate deployment of the wishlist synchronization hotfix.

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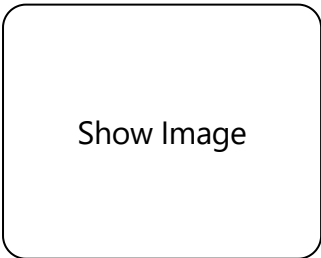
1. Test Objective

The primary objective of this testing cycle was to evaluate the quality, functionality, performance, and usability of the ShopNow e-commerce mobile application version 2.1.3 before its release to production. Specifically, our testing aimed to:

1. Validate that all newly implemented features function according to the requirements specifications, particularly the enhanced payment gateway integrations and personalized recommendation engine.

2. Ensure that bug fixes from previous versions (v2.1.1 and v2.1.2) have been successfully resolved and do not reintroduce previous issues.

3. Verify the application's performance under various network conditions and user loads, with special attention to checkout process optimization.

4. Assess the application's compatibility across different mobile devices, operating systems, and screen sizes to ensure a consistent user experience.

5. Validate security measures in place for user data protection, especially surrounding the new saved payment methods feature.

This round of testing was conducted over a three-week period from March 18, 2025, to April 7, 2025, following the development team's feature freeze on March 17, 2025.

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2. Areas Covered

2.1 Functional Testing

The following functional areas were thoroughly tested:

- **User Authentication & Account Management**
  - Registration process
  - Login/logout functionality
  - Password reset flow
  - Account information management
  - User preferences settings

- **Product Catalog & Search**
  - Product browsing and category navigation
  - Search functionality (text, voice, and image search)
  - Product filtering and sorting
  - Product details display
  - Recently viewed items tracking

- **Shopping Cart & Checkout**

- Add/remove items functionality

  - Quantity modification

  - Save for later feature

  - Shipping options and calculations

  - All payment methods (credit cards, digital wallets, buy-now-pay-later options)

  - Order confirmation and receipt generation

- **New Features**

  - Personalized product recommendation engine

  - Enhanced payment gateway integration (5 new payment methods)

  - Wishlist sharing via social media

  - AR-based product visualization for furniture items

 - In-app customer service chat

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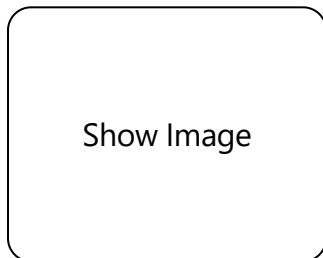
2.2 Non-Functional Testing

The following non-functional areas were tested:

- **Performance Testing**

  - Response time for critical functions

  - Application behavior under various network conditions (4G, 5G, Wi-Fi, poor connectivity)

  - Memory usage and battery consumption

  - Load testing for server-side operations

- **Compatibility Testing**

  - Testing across Android (versions 10-14) and iOS (versions 15-18)

  - Testing on various screen sizes and resolutions

  - Testing with different device manufacturers (Samsung, Google, Apple, Xiaomi, OnePlus)

- **Security Testing**

  - Input validation and sanitization

  - Authentication and authorization mechanisms

  - Secure storage of sensitive user data

  - Session management

- SSL/TLS implementation
- **Usability Testing**
  - Navigation flow
  - Accessibility compliance
  - Error message clarity
  - Localization for 5 languages (English, Spanish, French, German, Japanese)


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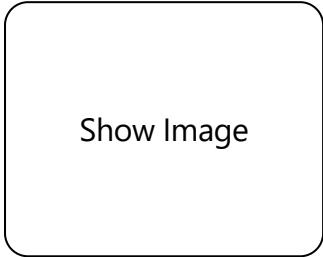
3. Areas Not Covered

The following areas were not included in this testing cycle:

- **Backend Administrative Dashboard**
  - Reason: The admin dashboard is scheduled for a separate update in v2.2.0 and will be tested in that cycle.
- **Integration with Physical Store Inventory Systems**
  - Reason: This feature is still under development and is scheduled for release in v2.2.0.
- **Full Penetration Testing**
  - Reason: A specialized third-party security firm has been contracted to perform comprehensive penetration testing, with results expected by April 20, 2025, before the production release.
- **Extended Performance Testing on Low-End Devices**
  - Reason: Time constraints prevented testing on devices older than 3 years. Testing focused on devices that represent 95% of our current user base according to analytics.
- **Marketplace Seller Portal**
  - Reason: Not part of the current release scope and scheduled for a separate dedicated testing cycle.

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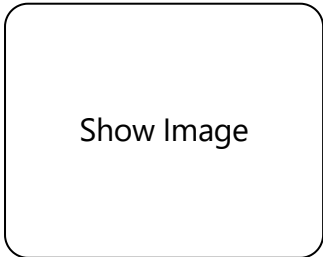
4. Testing Approach

4.1 Test Strategy

Our testing approach combined various testing methodologies to ensure comprehensive coverage:

1. **Risk-Based Testing**
   - We identified high-risk areas through stakeholder interviews and historical defect analysis.
   - Payment processing, user authentication, and the new recommendation engine received additional testing focus due to their critical nature.

2. **Test Case Design**
   - Test cases were designed using both black-box and white-box techniques.
   - Boundary value analysis and equivalence partitioning were applied to input fields.
   - Decision tables were used for complex business rules in the checkout process.

3. **Automation & Manual Testing Balance**
   - Regression test suite was fully automated (452 test cases).
   - New features were initially tested manually, with automation scripts developed in parallel.
   - Exploratory testing sessions were conducted for usability and edge cases.

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4.2 Testing Process

The testing process followed these phases:

1. **Test Planning (March 10-17, 2025)**
   - Test plan creation and resource allocation
   - Test environment setup and data preparation
   - Test case review and prioritization

2. **Test Execution (March 18-April 3, 2025)**
   - Smoke testing on each new build
   - Full regression testing on stable builds
   - Feature-specific testing for new functionality
   - Non-functional testing (performance, security, compatibility)

3. **Defect Management (Ongoing)**
   - Defects logged in JIRA with severity and priority assignments
   - Daily defect triage meetings with development team

- Verification testing for fixed defects

4. **Reporting & Analysis (April 4-7, 2025)**
   - Test results compilation and metrics analysis
   - Final assessment and recommendations
   - Report preparation and stakeholder presentation

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4.3 Testing Tools

The following tools were utilized during the testing process:

- **Test Management**: TestRail
- **Defect Tracking**: JIRA
- **Automation Framework**: Appium 2.2.1 with Python 3.11
- **Performance Testing**: JMeter 5.6, Firebase Performance Monitoring
- **Compatibility Testing**: BrowserStack App Live
- **Security Testing**: OWASP ZAP, Mobile Security Framework
- **Accessibility Testing**: Accessibility Scanner, VoiceOver/TalkBack

4.4 Sample Key Test Cases

Below are examples of critical test cases that helped validate core functionality:

Test Case ID: TC-PAYMENT-001

- **Title**: Credit Card Payment Processing - Complete Flow
- **Preconditions**: User logged in, items added to cart, checkout initiated
- **Steps**:
  1. Select "Credit Card" as payment method
  2. Enter valid credit card details (Visa: 4111 1111 1111 1111)
  3. Complete purchase process
- **Expected Results**: Order confirmed, payment processed, confirmation email sent
- **Actual Results**: As expected
- **Status**: PASS

Test Case ID: TC-SECURITY-054

- **Title**: Saved Payment Methods - Data Encryption

- **Preconditions**: User with saved payment methods

- **Steps**:

    1. Intercept API responses when retrieving saved payment methods

    2. Analyze data format in transit and at rest

- **Expected Results**: All sensitive data encrypted, card numbers masked except last 4 digits

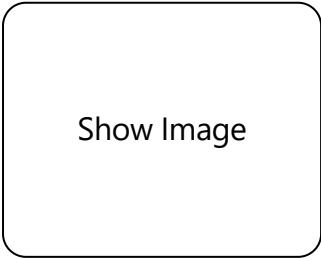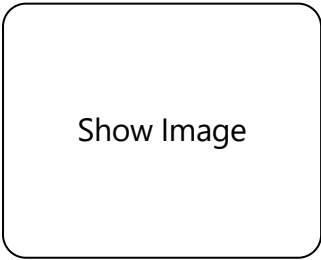- **Actual Results**: As expected

- **Status**: PASS

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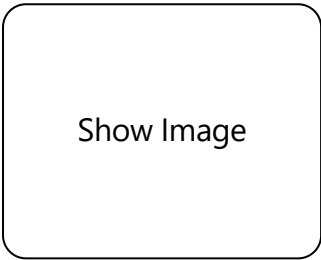
5. Defect Report

5.1 Defect Summary

A total of 87 defects were identified during the testing cycle, categorized by severity as follows:

Severity	Count	Closed	Open
Critical	5	5	0
High	12	11	1
Medium	38	34	4
Low	32	22	10
Total	**87**	**72**	**15**

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5.2 Critical Defects (All Resolved)

1. **Payment Processing Failure for International Credit Cards** (SHOP-4523)
   - Description: Transactions with non-US credit cards failed at the final step with a generic error.
   - Root Cause: Currency conversion issue in the new payment gateway integration.
   - Resolution: Fixed by updating the payment processor API to handle international currency codes correctly.

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2. **User Data Exposure in API Response** (SHOP-4531)
   - Description: Full credit card details were being returned in plaintext in the API response after adding a new payment method.
   - Root Cause: Missing data masking in the payment API response handler.
   - Resolution: Implemented proper masking for sensitive data and encryption for API responses.

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3. **App Crash on Product Image Zoom** (SHOP-4547)
   - Description: Application consistently crashed when users attempted to zoom in on product images on Android 12 devices.
   - Root Cause: Memory leak in the image processing library.
   - Resolution: Updated image handling library and implemented better memory management.

4. **Incorrect Order Totals with Promotions** (SHOP-4562)
   - Description: Order totals were calculated incorrectly when multiple promotional discounts were applied.
   - Root Cause: Logic error in the discount aggregation algorithm.
   - Resolution: Revised the discount calculation logic and added unit tests for various promotion combinations.

5. **Authentication Bypass on Deep Link Navigation** (SHOP-4578)
   - Description: Users could access order history without authentication when navigating via specific deep links.
   - Root Cause: Missing authentication check in the deep link handler.

- Resolution: Implemented proper authentication verification for all deep link navigation paths.

5.3 Open High-Severity Defect

1. **Intermittent Synchronization Issue with Wishlist** (SHOP-4589)
   - Description: Approximately 5% of the time, items added to wishlist while offline are not synchronized when the connection is restored.
   - Current Status: Development team has identified the root cause as a race condition in the synchronization process.
   - Mitigation Plan: Temporary warning added to inform users to check their wishlist after reconnecting. Fix is scheduled for deployment in a hotfix release on April 12, 2025.

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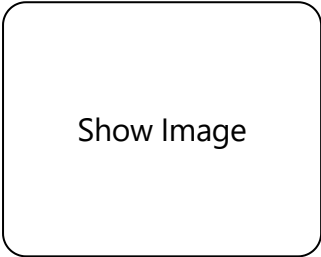
5.4 Defect Trend Analysis

The defect discovery rate decreased significantly in the final week of testing, indicating stabilizing quality:

- Week 1: 52 defects discovered (60%)
- Week 2: 27 defects discovered (31%)
- Week 3: 8 defects discovered (9%)

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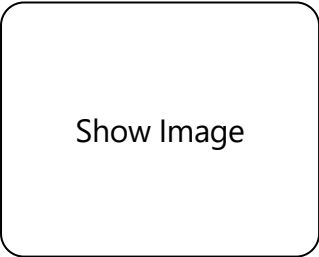
The declining trend in defect discovery, particularly for high and critical severity issues, suggests the application has reached an acceptable level of stability.

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6. Platform Details

6.1 Test Environment

Server Environment:

- Backend API: Production-like environment with isolated database
- Content Delivery Network: Akamai staging environment
- Database: PostgreSQL 15.3

- Cache: Redis 7.2
- API Version: v3.4.2

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Client Environments:

Android Devices:

| Device Model	OS Version	Screen Resolution
Samsung Galaxy S23	Android 14	1080 x 2340
Google Pixel 7	Android 14	1080 x 2400
Xiaomi Mi 11	Android 13	1440 x 3200
Samsung Galaxy A53	Android 13	1080 x 2400
OnePlus 10T	Android 13	1080 x 2412
Google Pixel 5	Android 12	1080 x 2340
Samsung Galaxy S20	Android 12	1440 x 3200
Motorola Moto G Power	Android 11	720 x 1600
Samsung Galaxy A32	Android 11	720 x 1600
Google Pixel 4	Android 10	1080 x 2280

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iOS Devices:

Device Model	OS Version	Screen Resolution
iPhone 15 Pro	iOS 18.1	1179 x 2556
iPhone 15	iOS 18.1	1179 x 2556
iPhone 14	iOS 18.1	1170 x 2532
iPhone 13 Pro	iOS 17.4	1170 x 2532
iPhone SE (2022)	iOS 17.4	750 x 1334
iPad Pro 12.9 (2023)	iOS 17.4	2732 x 2048
iPhone 12	iOS 16.5	1170 x 2532
iPhone 11	iOS 16.5	828 x 1792
iPad Air (2022)	iOS 16.5	2360 x 1640
iPhone XR	iOS 15.7	828 x 1792

6.2 Network Conditions Tested

- **High-Performance**: Wi-Fi (100+ Mbps)

- **Average Mobile**: 4G/LTE (10-20 Mbps)

- **5G Connection**: 5G (50+ Mbps)

- **Poor Connection**: Throttled 3G (1-2 Mbps)

- **Intermittent Connection**: Simulated connection drops and recoveries

- **Offline Mode**: Testing offline functionality and data synchronization upon reconnection

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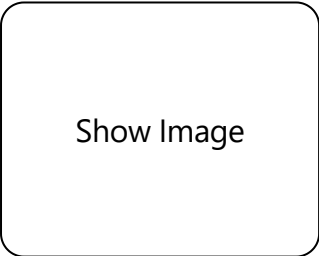
6.3 Tools and Frameworks

- **Automated Testing**: Appium 2.2.1 with Python 3.11

- **Performance Monitoring**: Firebase Performance Monitoring, JMeter 5.6

- **Crash Analytics**: Firebase Crashlytics

- **Accessibility Testing**: Android Accessibility Scanner, iOS Accessibility Inspector

- **Device Farm**: BrowserStack with 20+ device configurations

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7. Overall Status

7.1 Testing Summary

- **Test Cases Executed**: 875 out of 875 planned (100%)

- **Test Case Pass Rate**: 828 passed (94.6%)

- **Automation Coverage**: 72% of all test cases

- **Code Coverage**: 87% (unit tests + integration tests)

- **Critical User Journeys**: 100% passing (all 15 critical user journeys verified)

7.2 Quality Assessment

Based on our testing results, the ShopNow v2.1.3 application has reached a satisfactory level of quality with the following observations:

Strengths:

- The core shopping functionality is stable and performs well across all tested devices.

- The new recommendation engine provides accurate product suggestions with proper performance.

- The application handles network interruptions gracefully in most scenarios.

- Accessibility compliance has improved significantly compared to previous versions.

Areas of Concern:

- The wishlist synchronization issue (SHOP-4589) affects a small percentage of users but has a workaround until fixed.

- Performance on older Android devices (specifically Android 10) shows slight degradation during image-heavy browsing sessions.

- The AR product visualization feature works well but consumes significant battery power during extended use.

7.3 Risk Assessment

The remaining risks associated with releasing the application are:

1. **Wishlist Synchronization Issue**: LOW RISK
   - Impact: Low (affects 5% of offline-to-online transitions for wishlist items only)
   - Mitigation: User notification implemented, hotfix scheduled within 4 days of release

2. **Performance on Older Devices**: LOW RISK
   - Impact: Low (affects < 8% of user base according to analytics)
   - Mitigation: Performance optimizations planned for v2.1.4

3. **Third-Party Payment Provider Integration**: LOW RISK
   - Impact: Potentially high (could affect checkout process)
   - Mitigation: Extensive testing completed, all critical issues resolved, monitoring plan in place

7.4 Release Recommendation

Based on our comprehensive testing and the current status of the application, the QA team **RECOMMENDS PROCEEDING WITH THE RELEASE** of ShopNow v2.1.3 to production, with the following conditions:

1. Implement the planned hotfix for the wishlist synchronization issue immediately after release.

2. Enable enhanced monitoring for the new payment gateway integration for the first 72 hours after release.

3. Confirm the rollout plan includes a phased approach (starting with 10% of users) to allow for early detection of any unforeseen issues.

7.5 Post-Release Activities

The following activities are recommended after release:

1. Close monitoring of application performance metrics for the first week.

2. Targeted user surveys to gather feedback on the new recommendation engine.

3. Analysis of crash reports and application performance across device spectrum.

4. Review of customer support tickets for any patterns indicating undiscovered issues.

5. Verification of the wishlist synchronization hotfix once deployed.

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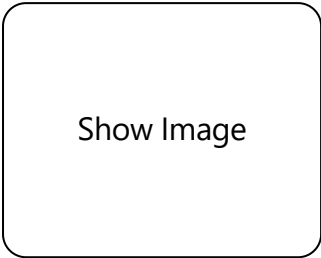
8. Requirements Traceability

The following table shows how key requirements were validated through testing:

Requirement ID	Requirement Description	Test Case IDs	Status
REQ-PAY-001	System shall support international payment methods	TC-PAY-001 through TC-PAY-015	PASSED
REQ-PAY-002	Payment information shall be encrypted	TC-SEC-042, TC-SEC-043	PASSED
REQ-RECOM-001	Recommendation engine shall personalize suggestions	TC-RECOM-001 through TC-RECOM-008	PASSED
REQ-PERF-001	Checkout process shall complete in <3 seconds on 4G	TC-PERF-012	PASSED
REQ-AR-001	AR visualization shall support furniture items	TC-AR-001 through TC-AR-005	PASSED with NOTE*

*Note: AR visualization meets requirements but has higher than expected battery consumption.

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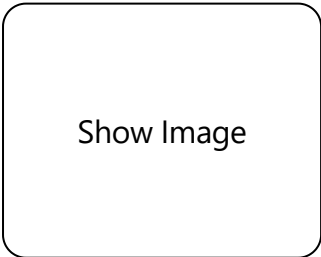
9. Testing Challenges & Lessons Learned

9.1 Challenges Encountered

1. **Device Availability**: Limited access to specific Android device models created scheduling challenges for device-specific testing.

- Solution: Implemented a device reservation system and augmented physical devices with BrowserStack testing.

2. **Test Data Generation**: Creating realistic shopping histories for recommendation engine testing proved difficult.
   - Solution: Used anonymized production data with permission from the data governance team.

3. **Third-Party Integrations**: Payment gateway sandbox environments experienced intermittent availability issues.
   - Solution: Created mock implementations for preliminary testing and scheduled critical payment testing during known stable periods.

4. **Performance Benchmarking**: Initial inconsistent performance results made trend analysis difficult.
   - Solution: Standardized testing protocols and environment conditions to create reliable baseline metrics.

9.2 Lessons Learned

1. **Early API Testing**: Beginning API testing before UI was complete allowed us to catch integration issues earlier and reduced end-to-end testing blockers.

2. **Automated Visual Testing**: Implementing visual comparison testing for UI components saved significant manual verification time.

3. **Collaborative Defect Triage**: Daily joint triage meetings with development improved fix turnaround time and reduced miscommunication.

4. **Progressive Feature Testing**: Testing features incrementally across sprints rather than waiting for complete implementation improved quality and reduced end-of-cycle pressure.

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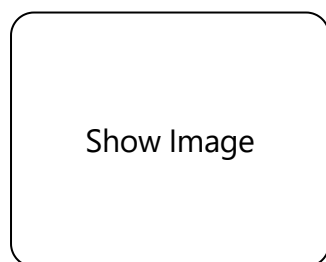
10. Appendices

10.1 Test Case Execution Details

Detailed test case execution results are available in TestRail under project "ShopNow-v2.1.3" (TR-2025-042).

10.2 Performance Test Results

Detailed performance test results are available in the separate Performance Test Report (PTR-2025-113).

10.3 Traceability Matrix

The full Requirements Traceability Matrix linking requirements to test cases and their results is available in document RTM-2025-042.

10.4 Test Data Used

Description of test datasets used during testing is available in the Test Data Inventory document (TDI-2025-042).

10.5 Defect Details

Complete details of all defects, including screenshots and reproduction steps, are available in JIRA project SHOP.

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11. Approvals

The following stakeholders have reviewed this report and approve the release recommendation or have noted their concerns:

Role	Name	Approval Date	Signature	Notes
QA Lead	Jennifer Martinez	April 8, 2025	[Approved]	Approves release with conditions noted in section 7.4
Development Lead	Michael Chen	April 8, 2025	[Approved]	Confirms completion of all critical fixes and readiness for hotfix deployment
Product Owner	Sarah Johnson	April 8, 2025	[Approved]	Accepts remaining risks and confirms business value of proceeding with release
Security Officer	David Wilson	April 8, 2025	[Approved]	Approves release pending completion of third-party penetration testing by April 20
Release Manager	Priya Patel	April 8, 2025	[Approved]	Will implement phased rollout as recommended

By signing above, approvers acknowledge they have reviewed this report in its entirety and understand the current state of the application, including any limitations, risks, and mitigation plans.

End of Test Report

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