

# BizTrackr - Grand Development Log

This document serves as a comprehensive log of the development phases, challenges faced, and solutions implemented during the creation of BizTrackr.

## ■ SaaS Platform Achievements

**Status:** ■ CORE FEATURES IMPLEMENTED

### ***Completed Features***

#### 1. ■ Role-Based Access Control (RBAC)

- Admin, Manager, and Cashier roles.
- Secured API endpoints and frontend routes.
- Verified with automated tests.

#### 2. ■ Inventory Management

- Category management (Create, Read, List).
- Product tracking with stock levels.

#### 3. ■ Sales & POS

- Point of Sale interface.
- PDF Receipt generation with QR codes.

#### 4. ■ Notifications System

- Real-time alerts for system events.
- Dedicated notifications management page.

## ■ Challenges Faced & Cleared

### ***1. Role-Based Access Control (RBAC) Implementation***

**Challenge:** Restricting access to sensitive areas (like User Management) based on user roles (Admin, Manager, Cashier) caused backend crashes due to circular imports or missing dependencies.

**Resolution:**

- Fixed the `NameError` in `users.py` by correctly importing `require\_manager\_or\_above`.
- Implemented frontend redirects in `users.tsx` for unauthorized users.
- Verified with comprehensive test scripts.

### ***2. Inventory Categories Fix***

**Challenge:** The "Manage Categories" feature was non-functional; adding new categories failed silently.

**Resolution:**

- Diagnosed as a side-effect of the RBAC import error crashing the server.
- Fixed the import, restarted the server, and verified with `quick\_test\_categories.py`.

### ***3. PDF Receipt Generation***

**Challenge:** Generating PDF receipts failed due to key mismatches (`product\_id` vs `item\_id`) in the API payload.

**Resolution:**

- Updated `sales\_service.py` and test scripts to use consistent keys.
- Successfully generated and saved PDF receipts locally.

## ■ Progress Report: Recent Enhancements

### ***Notifications System***

- **Goal:** Provide a dedicated page for users to view and manage notifications.
- **Implementation:** Created `/dashboard/notifications` with "Mark as read" and "Mark all as read" functionality.
- **Result:** Fully functional notification center integrated with the top bar.

### ***Comprehensive System Re-Test***

- **Goal:** Verify all features (Auth, Inventory, Sales, PDF, RBAC) work together.
- **Result:**
  - Login successful for all roles.
  - Inventory creation works.
  - Sales & PDF generation works.
  - RBAC permissions enforced correctly.

## ■ Future Roadmap

### ***Priority 1: Advanced Analytics***

- Implement detailed sales charts and graphs.
- User performance tracking.

### ***Priority 2: Mobile Responsiveness***

- Optimize the SaaS frontend for mobile devices.

### ***Priority 3: Third-Party Integrations***

- Payment gateway integration (Stripe/PayPal).
- Email service integration (SendGrid/AWS SES).