Mosaic Biz Hub Project Documentation

# 1. Introduction

Project Name: Mosaic Biz Hub  
  
 Overview: Mosaic Biz Hub is a digital marketplace aimed at empowering minority-owned businesses. It helps businesses showcase their products and services, offering customers a diverse range of options. The platform integrates features like product listing, AI-powered recommendations, service booking, and vendor subscription tiers.  
  
 Target Audience: Vendors (minority-owned businesses), customers looking to support and purchase from these businesses.  
  
 Key Features:  
  
 - Product Listings  
  
 - Subscription-based Vendor Model  
  
 - AI Recommendations  
  
 - Service Booking  
  
 - Subscription Plans (Basic, Standard, Premium, Platinum)  
  
 - Review System  
  
 - AI-powered Customer Support (Chatbot)

# 2. System Architecture

Tech Stack:  
 - Frontend: Next.js, Tailwind CSS  
 - Backend: Node.js, Express.js  
 - Database: MongoDB  
 - Authentication: JWT  
 - Third-party services: Stripe (payments), Dialogflow or Rasa (AI chatbot), Firebase/OneSignal (push notifications), TensorFlow.js or Google AI (recommendations)  
 - Cloud: Vercel (Frontend), AWS/Heroku (Backend), MongoDB Atlas (Database)  
   
 Architecture Diagram:  
 The diagram represents the flow of data between frontend, backend, and database. The frontend interacts with the backend API, which connects to the MongoDB database and integrates with third-party services like Stripe and Firebase.

# 3. Features & Functionality

1. User Authentication:  
 - Registration and login for both vendors and customers using JWT-based authentication.  
   
 2. Vendor Dashboard:  
 - Manage business profile, products, services, and subscription plans.  
   
 3. Customer Dashboard:  
 - Browse products, place orders, view order history, and book services.  
   
 4. Product Management:  
 - Add, edit, delete products, manage inventory, and offer discounts.  
   
 5. Service Booking:  
 - Book and pay for services (appointments, consultations).  
   
 6. Subscription Model:  
 - Multiple subscription tiers for vendors (Basic, Standard, Premium, Platinum).  
   
 7. Reviews & Ratings:  
 - Leave product/service reviews and ratings.  
   
 8. AI Recommendation System:  
 - Personalized recommendations based on customer behavior.  
   
 9. AI Chatbot Integration:  
 - Chatbot to assist with FAQs, product inquiries, order tracking, etc.  
   
 10. Push Notifications:  
 - Notify users about orders, promotions, and new products.

# 4. Database Design

User Collection: Stores customer/vendor details including email, password (hashed), roles, and subscription tier.  
 Product Collection: Stores product details including name, description, price, stock, vendor association, and reviews.  
 Order Collection: Stores order details including customer info, product info, and order status.  
 Service Collection: Stores service offerings by vendors.  
 Review Collection: Stores product/service reviews.  
 Subscription Collection: Stores vendor subscription information.  
 Recommendation Collection: Stores personalized product recommendations for customers.

# 5. API Documentation

Authentication API:  
 - POST /api/signup: User sign-up endpoint.  
 - POST /api/login: User login endpoint.  
 - POST /api/logout: User logout endpoint.  
   
 Product API:  
 - GET /api/products: List all products.  
 - POST /api/vendor/products: Add new product.  
 - PUT /api/vendor/products/:id: Update a product.  
 - DELETE /api/vendor/products/:id: Delete a product.  
   
 Order API:  
 - POST /api/orders: Place an order.  
 - GET /api/orders/:customerId: View customer's orders.  
   
 Subscription API:  
 - POST /api/subscription: Create/update vendor subscription.  
 - GET /api/subscription: View subscription details.  
   
 Recommendation API:  
 - GET /api/recommendations: Get personalized recommendations for a customer.

# 6. Revenue Model

Vendor Subscriptions:  
 - Basic Plan: $99/year (standard listing, limited media).  
 - Standard Plan: $299/year (enhanced visibility, ad options).  
 - Premium Plan: $499/year (priority listing, unlimited media, advanced analytics).  
   
 Transaction Fees:  
 - 2-5% commission on each product sale or service booking.  
   
 In-App Advertising:  
 - Vendors pay for promoted listings, homepage features, and category sponsorships.  
   
 Premium Features for Customers:  
 - $9.99/year for ad-free browsing, exclusive discounts, and early access to deals.  
   
 Affiliate & Referral Program:  
 - Vendors earn discounts on subscriptions for referring new businesses.

# 7. Security Considerations

Data Security: Use HTTPS for secure communication.  
 Authentication: JWT tokens for secure user authentication and authorization.  
 Payment Security: PCI-DSS compliant payment gateways (Stripe/PayPal).  
 Data Encryption: Use bcrypt or similar for password hashing and encryption.

# 8. Deployment and Scaling

Deployment:  
 - Frontend: Deploy on Vercel (for Next.js).  
 - Backend: Host on AWS or Heroku.  
 - MongoDB: Use MongoDB Atlas for cloud database hosting.  
   
 Scalability:  
 - Ensure platform scalability with load balancing and CDN for content delivery.  
 - Set up CI/CD pipelines for automatic deployment with GitHub Actions or CircleCI.

# 9. Testing & Quality Assurance

Unit Testing: Test individual API endpoints and core logic.  
 Integration Testing: Test the interaction between frontend, backend, and database.  
 User Testing: Conduct UAT to ensure the platform meets business requirements.  
 Load Testing: Use tools like Artillery or Apache JMeter for load and performance testing.

# 10. Maintenance and Updates

Bug Fixes: Continuously monitor and fix issues reported by users.  
 Feature Updates: Regularly update features based on user feedback.  
 User Feedback: Implement mechanisms to gather user feedback for platform improvement.