FreshMart Analytics - Complete Business Management System

Executive Summary

FreshMart Analytics is a comprehensive full-stack web application designed specifically for your grocery store and restaurant operations. The system provides real-time analytics, automated data processing, and role-based access control for your team to efficiently track sales, manage inventory, analyze profitability, and monitor staff performance across all business categories.

System Overview

Business Scope

- **Grocery Operations**: Track retail sales of grocery items, vegetables, and meat
- **Restaurant Operations**: Monitor dish sales by chef and track kitchen performance
- **Inventory Management**: Automated categorization with manual correction capabilities
- **Financial Analytics**: Comprehensive profit/loss analysis by category
- **Staff Performance**: Individual chef and staff performance tracking

Key Features Delivered

1. Sales Analytics Dashboard

- Total sales tracking by date range and category
- Real-time revenue monitoring for Meat, Vegetables, Grocery, and Restaurant categories
- Weekly/Monthly sales trend visualization
- Category-wise breakdown with interactive charts
- Export functionality (CSV/Excel) for management reporting

2. Staff Performance Analytics

- Individual chef performance tracking
- Dish sales attribution by chef
- Revenue contribution analysis per staff member

- Performance leaderboards and rankings
- Detailed performance metrics and trends

3. Profitability Analysis

- Sales vs Expenses comparison by category
- Net profit calculation: Sales - Spending by category
- Profit margin visualization for all business segments
- ROI analysis and business efficiency metrics
- Actionable insights and recommendations

4. Admin Panel & Data Management

- Secure file upload system for monthly data
- Automated column mapping and data validation
- Manual categorization tools for uncategorized items
- Bulk data processing and error handling
- User management and role-based access control

5. Flexible Data Processing

- **Smart Column Mapping**: Automatically detects variations in column names
- **Multiple File Formats**: Supports CSV and Excel (.xlsx) files
- **Date Format Flexibility**: Handles various date formats automatically
- **Missing Data Handling**: Graceful handling of incomplete data sets
- **Validation & Preview**: Data preview before processing with error reporting

Technical Architecture

Frontend (React.js)

- **Framework**: React 18 with modern hooks and functional components
- **Styling**: Tailwind CSS for responsive, professional design
- **Charts**: Recharts library for interactive data visualizations
- **UI Components**: Custom component library with consistent design system
- **Authentication**: Role-based access control with secure session management

Backend (Flask/Python)

- **API Framework**: Flask with RESTful API design
- **Database**: SQLite for reliable data storage with easy backup
- **File Processing**: Pandas for Excel/CSV data processing

- **Authentication**: Secure login system with session management
- **CORS**: Configured for frontend-backend communication

Database Schema

- **Users**: Admin and staff user management
- **Inventory**: Product catalog with categories and SKUs
- **Sales**: Transaction records with chef attribution
- **Expenses**: Spending records by category and date
- **Chef Mappings**: Dish-to-chef relationship management

User Roles & Access Control

Admin Users

- Full system access and configuration
- File upload and data management
- User management and role assignment
- System settings and category management
- Complete analytics and reporting access

Staff Users

- View-only access to relevant dashboards
- Personal performance metrics
- Limited reporting capabilities
- No administrative functions

Installation & Setup Guide

Prerequisites

- Python 3.11+
- Node.js 20+
- Modern web browser

Backend Setup

```
 cd restaurant_management_api
python -m venv venv
source venv/bin/activate  # On Windows: venv\Scripts\activate
```

```
pip install -r requirements.txt
python src/main.py
```

Frontend Setup

```
cd restaurant_management_frontend
npm install
npm run dev
```

Default Login Credentials

- **Username**: admin
- **Password**: admin123
- **Role**: Administrator (full access)

Data Upload Process

Monthly Data Requirements

1. Sales Report File

- **Format**: CSV or Excel (.xlsx)
- **Required Columns**: Item Name, Quantity, Sale Amount, Date
- **Optional Columns**: Category, SKU, Customer Info
- **Example**: `LineItemsExport-YYYYMM.csv`

2. Inventory File

- **Format**: Excel (.xlsx)
- **Required Columns**: Item Name, SKU, Category
- **Categories**: Meat, Vegetables, Grocery, Kitchen, Restaurant
- **Example**: `inventory-export-v2.xlsx`

3. Chef Mapping File

- **Format**: Excel (.xlsx)
- **Required Columns**: Chef Name, Dish Name
- **Purpose**: Attribution of dish sales to specific chefs
- **Example**: `item_chef_mapping_final.xlsx`

4. Expense File

- **Format**: Excel (.xlsx)
- **Required Columns**: Category, Item, Amount, Date
- **Categories**: Should match sales categories for accurate profit analysis
- **Example**: `DD_May_Financial_Sheet.xlsx`

Upload Process

1. **Login** as admin user
2. **Navigate** to Admin Panel (or Reports & Export section)
3. **Select Files** using the upload interface
4. **Preview Data** to verify column mapping
5. **Process Files** - system will automatically categorize known items
6. **Review Uncategorized Items** and assign categories manually
7. **Confirm Processing** to update all dashboards

Dashboard Usage Guide

Sales Analytics Dashboard

- **Date Range Selection**: Use date pickers to filter data by time period
- **Category Filtering**: Select specific categories (Meat, Vegetables, etc.)
- **Export Options**: Download reports as CSV or Excel for management
- **Trend Analysis**: View daily, weekly, and monthly sales patterns

Staff Performance Dashboard

- **Individual Metrics**: Click on chef names to view detailed performance
- **Leaderboards**: Compare performance across all staff members
- **Time Period Analysis**: Track performance trends over time
- **Revenue Attribution**: See which dishes generate the most revenue

Profitability Dashboard

- **Category Comparison**: Compare profit margins across business segments
- **Expense Tracking**: Monitor spending patterns by category
- **ROI Analysis**: Identify most and least profitable areas
- **Actionable Insights**: Get recommendations for business optimization

Data Security & Privacy

Security Features

- **Encrypted Authentication**: Secure login with session management
- **Role-Based Access**: Granular permissions by user role
- **Data Validation**: Input sanitization and validation
- **Secure File Upload**: Virus scanning and file type validation

Privacy Considerations

- **Local Data Storage**: All data remains on your servers
- **No External Dependencies**: No third-party data sharing
- **Backup Capabilities**: Easy database backup and restore
- **Access Logging**: Track user activities for audit purposes

Maintenance & Support

Regular Maintenance Tasks

- **Monthly Data Upload**: Process new sales and expense data
- **User Management**: Add/remove team members as needed
- **Category Updates**: Maintain product categories and mappings
- **Database Backup**: Regular backup of business data

Troubleshooting Common Issues

- **Upload Errors**: Check file format and column names
- **Missing Categories**: Use manual categorization tools
- **Performance Issues**: Clear browser cache and restart services
- **Access Problems**: Verify user roles and permissions

Future Enhancements

Planned Features

- **Automated Email Reports**: Scheduled report delivery to management
- **Mobile App**: Native mobile application for on-the-go access
- **Advanced Analytics**: Machine learning for sales forecasting
- **Integration APIs**: Connect with POS systems and accounting software

- **Multi-Location Support**: Manage multiple store locations

Customization Options

- **Custom Categories**: Add business-specific product categories
- **Report Templates**: Create custom report formats
- **Dashboard Layouts**: Personalize dashboard arrangements
- **Alert Systems**: Set up automated alerts for key metrics

Technical Support

System Requirements

- **Minimum RAM**: 4GB for smooth operation
- **Storage**: 10GB for data and application files
- **Network**: Stable internet connection for team access
- **Browser**: Chrome, Firefox, Safari, or Edge (latest versions)

Backup & Recovery

- **Database Backup**: Automated daily backups recommended
- **File Storage**: Regular backup of uploaded data files
- **System Recovery**: Complete system restore procedures documented
- **Data Export**: Full data export capabilities for migration

Conclusion

FreshMart Analytics provides your team with a comprehensive, secure, and user-friendly platform to manage all aspects of your grocery and restaurant operations. The system's flexibility in handling various data formats, combined with powerful analytics and role-based access control, makes it an ideal solution for your business needs.

The application is designed to grow with your business, offering scalability and customization options to adapt to changing requirements. With proper maintenance and regular data updates, FreshMart Analytics will continue to provide valuable insights to drive your business success.

For technical support or customization requests, please refer to the development team or system administrator.