



BIZCHAIN CONNECT: AUTOMATED ORDER PROCESSING AND INVENTORY OPTIMIZATION

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-----ABSTRACT-----

“BIZCHAIN CONNECT: AUTOMATED ORDER PROCESSING AND INVENTORY OPTIMIZATION” is an Android-based mobile application developed to automate order processing and inventory management for hosiery wholesalers and their retailers. The system provides a digital platform where retailers can browse available products, view real-time pricing, place bulk orders, and track order status efficiently. On the backend, wholesalers can manage inventory, monitor stock levels, process orders, and maintain accurate records in real time. By replacing traditional manual methods such as phone calls, paper logs, and in-person visits, Biz Chain Connect reduces human error, saves time, and improves operational efficiency.

-----INTRODUCTION-----

In today’s fast-paced digital era, automation has become essential for improving efficiency and accuracy in business operations. Traditional wholesale businesses, especially in the hosiery sector, continue to rely on manual methods such as phone calls, paper records, and messaging applications for order placement and inventory management. These approaches often lead to delays, miscommunication, human errors, and lack of real-time stock visibility, making it difficult for businesses to scale and operate efficiently. BizChain Connect is an Android-based mobile application developed to address these challenges by providing a centralized digital platform.

LITERATURE SURVEY

The literature review plays a vital role in the development of the BizChain Connect project as it provides a comprehensive understanding of existing systems, technologies, and methodologies related to wholesale order processing and inventory management. By analyze previous research studies, mobile commerce platforms, and supply chain management systems, the project identifies common challenges such as manual order handling, lack of real-time inventory visibility, inefficient

communication between wholesalers and retailers, and frequent human errors. The review helps in understanding how automation and mobile-based solutions have been successfully applied in similar business domains.

“Lee, H. L., Padmanabhan, V., & Whang, S. (1997/2004) – Bullwhip Effect”:

The bullwhip effect describes how small demand changes at the retail level cause large fluctuations in inventory across the supply chain. Automated order processing and real-time inventory updates help reduce this effect.

“Rochet, J-C., & Tirole, J. (2002–2004) – Two-Sided Market Theory”:

This theory explains platforms that connect two different user groups, where the value of the platform increases as more users join each side. It is relevant to BizChain Connect as it links wholesalers and retailers through a single digital platform.

“Digital Wholesale Observations (2021) – Vogue Business”:

This literature discusses the shift from traditional wholesale practices to digital platforms for faster and transparent transactions. It emphasizes the importance of mobile technology in modern wholesale operations.

“B2B Growth Levers (2024) – Deloitte WSJ”:

This report identifies digital transformation, automation, and data-driven decision-making as key drivers of B2B business growth. These concepts align with BizChain Connect’s focus on automation and inventory optimization.

“Distribution Strategy Group (2025) – Optimizing B2B eCommerce for Distributors”:

This study highlights how digital B2B platforms improve distributor efficiency through automation, real-time data access, and streamlined order workflows.

PROBLEM STATEMENT

The BizChain Connect project aims to address the inefficiencies of traditional wholesale business operations that rely on manual order processing and inventory management methods. These manual practices often result in human errors, delayed order processing, lack of real-time stock visibility, and poor communication between wholesalers and retailers. There is a growing need for a digital solution that can streamline wholesale operations, improve inventory accuracy, and provide a reliable communication platform between business stakeholders. BizChain Connect is developed to fulfill this need by offering an automated, mobile-based system that enhances operational efficiency and transparency.

OBJECTIVES OF PROJECT

- To automate order processing and inventory management
- To provide real-time stock availability and order status updates
- To reduce manual effort and human errors in wholesale operations
- To improve communication between wholesalers and retailers
- To enable efficient product listing and bulk order placement
- To support secure transaction and payment tracking..

SCOPE OF THE PROJECT

The scope of the BizChain Connect project is to develop an Android-based mobile application that automates order processing and inventory management for hosiery wholesalers and their retailers. The system focuses on providing a centralized digital platform where retailers can browse products, view real-time stock availability, place bulk orders, and track order status, while wholesalers can manage product listings, monitor inventory levels, and process orders efficiently.

EXISTING SYSTEM

In the existing system, wholesale business operations are mainly carried out using traditional manual methods. Retailers place orders through phone calls or messaging applications, and wholesalers maintain inventory records using paper registers or basic spreadsheets. There is no centralized system to manage product details, orders, or stock levels in real time. As a result, wholesalers often face difficulties in tracking inventory accurately and managing multiple retailer orders efficiently.

The lack of automation leads to frequent human errors, delayed order processing, miscommunication, and poor record maintenance. Retailers do not have access to live stock availability or order status updates, which affects decision-making and causes uncertainty. Overall, the existing system is inefficient, time-consuming, and not scalable for growing wholesale businesses.

PROPOSED SYSTEM

The proposed system, BizChain Connect, is an Android-based mobile application designed to automate and streamline wholesale order processing and inventory management. The system provides a centralized digital platform that connects wholesalers and retailers, eliminating the need for manual order placement through phone calls or messaging applications. Retailers can browse products, view real-time stock availability, place bulk orders, and track order status through the mobile application. Wholesalers are provided with an admin panel to manage product li

Key features

- Android-based mobile application for retailers and wholesalers
- Secure user authentication and role-based access control
- Product catalog with real-time stock availability
- Bulk order placement and order tracking
- Automated inventory management and stock updates
- Low-stock alerts and notifications

SYSTEM ARCHITECTURE

The system architecture of BizChain Connect follows a client–server model that integrates a mobile frontend, a backend server, and a centralized database. The frontend consists of an Android mobile application used by retailers and wholesalers to interact with the system. Users can log in, browse products, place orders, track order status, and manage accounts through a user-friendly interface. All user requests from the mobile application are sent securely to the backend server through RESTful APIs.

The backend server is developed using Django and acts as the core processing unit of the system. It handles business logic such as user authentication, product management, order processing, inventory updates, transaction handling, and notification services. The backend communicates with a PostgreSQL database that stores all system data, including user details, product information, orders, inventory records, and transaction details. Secure authentication and authorization mechanisms ensure controlled access to system resources.

Additionally, the system supports real-time updates and notifications to keep users informed about order status and stock changes. The modular architecture allows easy maintenance, scalability, and future enhancements. Overall, the architecture ensures efficient data flow, high reliability, and secure communication between system components, making BizChain Connect a robust solution for wholesale order and inventory management.

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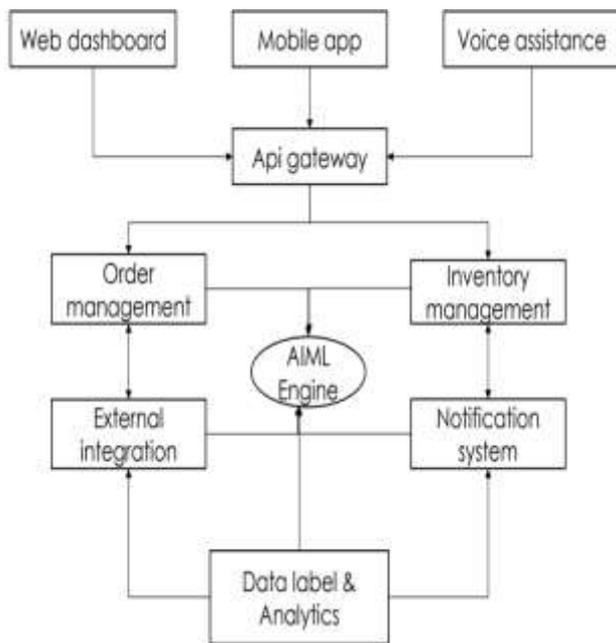
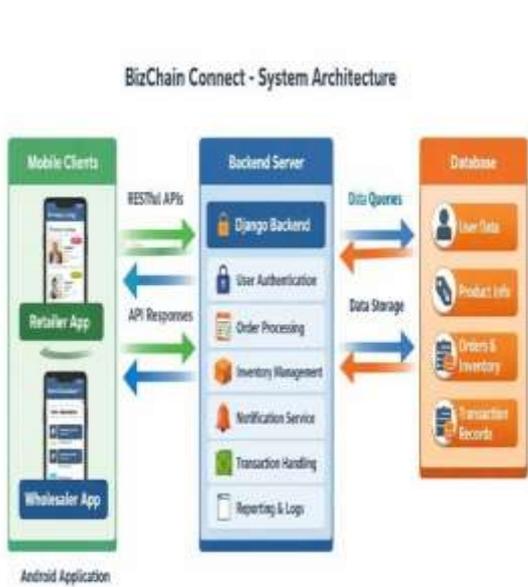


Fig. System Architecture

FRONTEND PROCESS

The frontend of the BizChain Connect system is an Android-based mobile application that provides the user interface for retailers and wholesalers. Through the frontend, users can perform actions such as logging in, browsing product listings, placing orders, tracking order status, and managing account details. The frontend captures user inputs and sends requests to the backend server through secure API calls. It also displays real-time data received from the backend, such as product availability, order updates, notifications, and transaction details, ensuring a smooth and interactive user experience. Through the frontend, users can perform actions such as logging in, browsing product listings, placing orders, tracking order status, and managing account details.



BACKEND PROCESS

The backend of the system is developed using Django and is responsible for handling all business logic and data processing. It receives requests from the frontend, validates user credentials, processes orders, updates inventory levels, manages transactions, and stores data in the PostgreSQL database. The backend also generates responses and sends them back to the frontend in a structured format. Security mechanisms such as authentication, authorization, and encrypted communication ensure safe data exchange. This coordinated working process between the frontend and backend enables BizChain Connect to function efficiently, providing real-time updates, accurate data management, and reliable system performance.

RESULT

ADMIN LOGIN PAGE:

The admin login page of the BizChain Connect system provides secure and authorized access to the wholesaler's administrative panel. This page is designed to ensure that only registered wholesalers or system administrators can log in to manage business operations. The login interface includes input fields for registered credentials such as username or email and password, along with validation checks to prevent unauthorized access. Proper error messages are displayed in case of invalid credentials, ensuring clarity and security.



Fig. Admin login page

PRODUCT/ORDER LISTING:

The product listing module in the BizChain Connect system displays a comprehensive and organized view of all available products to retailers and administrators. Products are listed with essential details such as product name, category, images, pricing, size or variant options, and real-time stock availability. Search and filter options allow users to quickly locate products based on category, price range, or availability. For wholesalers, the product listing page also provides options to edit product details, update stock quantities, enable or disable product visibility, and manage bulk pricing, ensuring efficient inventory control.

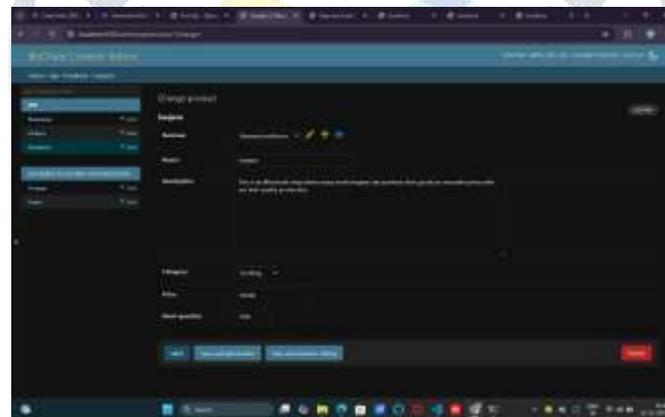
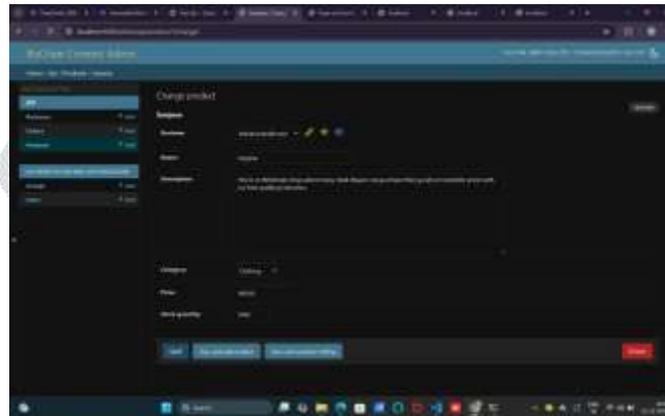
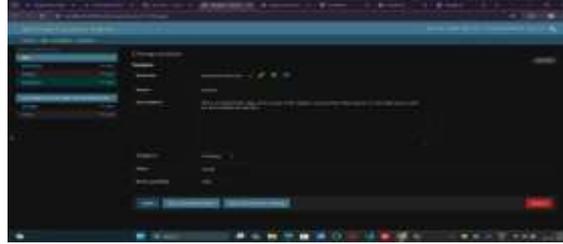


Fig. Product/Order Listing

ADMIN PANEL DASHBOARD:

The admin panel dashboard in the BizChain Connect system serves as a centralized control interface for wholesalers to monitor and manage overall business operations. The dashboard provides a summarized view of key metrics such as total products, available stock, total orders, pending and completed orders, and recent transactions. Visual indicators like charts and counters help administrators quickly understand sales performance and inventory status. The dashboard also displays alerts for low-stock products, enabling timely inventory replenishment and preventing stock shortages.



Fig. Admin Panel Dashboard

USERS DETAILS:

The user details module in the BizChain Connect system manages and maintains complete information about registered retailers and wholesalers using the application. This module stores essential user information such as business name, contact details, registered mobile number, email address, delivery address, and account credentials. For wholesalers, it also includes administrative information required to manage products, orders, and inventory. All user data is securely stored and protected using authentication and authorization mechanisms to prevent unauthorized access.

The user details section allows administrators to view, verify, and manage retailer accounts, including approval status, credit limits, and transaction history. Retailers can update their profile information, change passwords, and manage account preferences through their user dashboard. This module ensures accurate user identification, improves communication between wholesalers and retailers, and supports smooth order processing and account management within the BizChain Connect system.

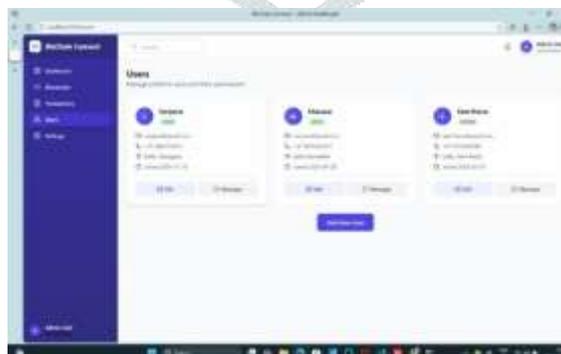
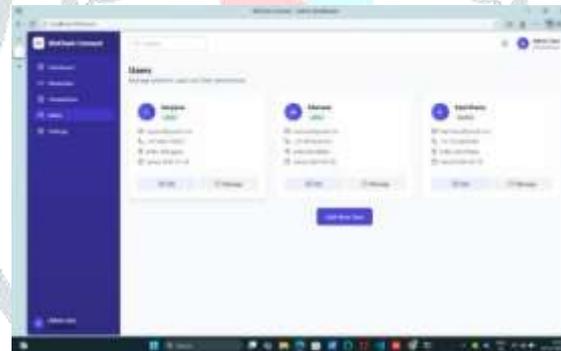
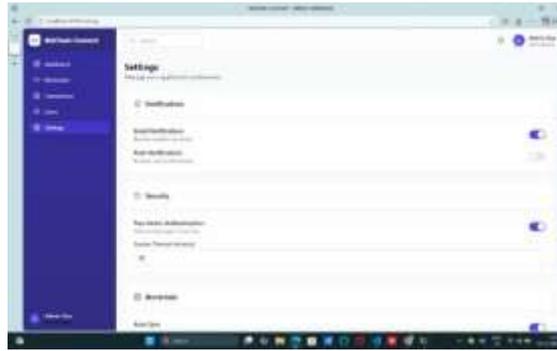


Fig. Users Details

SECURITY DETAILS:

Security is a critical aspect of the BizChain Connect system to ensure the protection of sensitive business and user data. The application implements secure authentication mechanisms, including username and password-based login with encrypted password storage, to prevent unauthorized access. Role-based access control is enforced to ensure that

wholesalers and retailers can only access features relevant to their roles. Session management and secure API communication are used to maintain data integrity and prevent unauthorized data manipulation.



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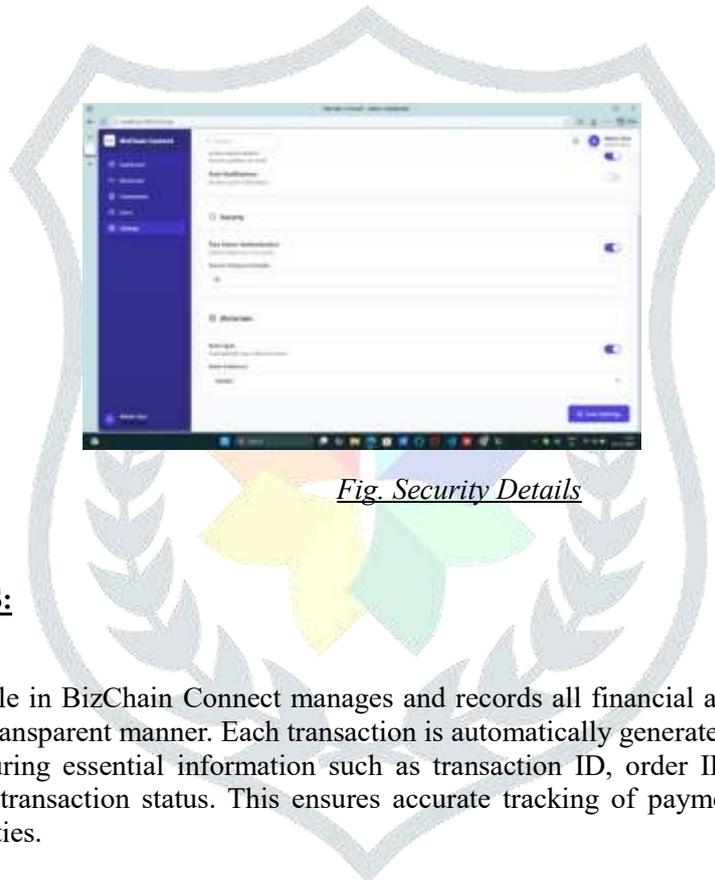


Fig. Security Details

TRANSACTION DETAILS:

The transaction details module in BizChain Connect manages and records all financial activities between retailers and wholesalers in a secure and transparent manner. Each transaction is automatically generated when an order is placed or a payment is completed, capturing essential information such as transaction ID, order ID, payment amount, payment method, date and time, and transaction status. This ensures accurate tracking of payments and helps maintain clear financial records for both parties.

 A screenshot of the BizChain Connect web application's transaction details page. The page is titled 'Transactions' and shows a table of transaction records. The table has columns for Transaction ID, Amount, Date, Status, and Action. There are four rows of data shown.

Transaction ID	Amount	Date	Status	Action
TX001	1000.00	2024-01-01	Success	View Details
TX002	2000.00	2024-01-02	Success	View Details
TX003	3000.00	2024-01-03	Success	View Details
TX004	4000.00	2024-01-04	Success	View Details

Fig. Transaction Details

-----CONCLUSION-----

The BizChain Connect project successfully addresses the challenges faced by traditional wholesale businesses by introducing an automated, Android-based solution for order processing and inventory management. By replacing manual methods such as phone-based ordering and paper records with a centralized digital platform, the system improves operational efficiency, reduces human errors, and ensures real-time visibility of inventory and order status. Retailers benefit from easy access to product information, bulk ordering, and order tracking, while wholesalers gain better control over inventory, order processing, and credit management.

FUTURE SCOPE

1. Extend the application to support iOS and web-based platforms.
2. Integrate advanced AI for demand forecasting and sales prediction.
3. Expand support to multiple product categories beyond hosiery.
4. Implement multi-language support for wider user accessibility.
5. Add GST invoicing and automated tax calculation features.
6. Integrate logistics and delivery tracking systems.
7. Enhance payment options including UPI, wallets, and auto-settlement.
8. Upgrade the AI chatbot with personalized recommendations.
9. Deploy cloud-based infrastructure for better scalability.
10. Strengthen security with advanced authentication and data encryption.

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