



Scheme Villa: A Zone-Based B2B Supply Chain Management Platform

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ABSTRACT

Scheme Villa is a modern B2B supply chain management platform designed to improve communication and operational efficiency between companies, distributors, sales representatives, and retailers. Traditional distribution systems mainly rely on manual communication through phone calls, spreadsheets, and messaging applications, resulting in delayed order processing, data insecurity, and inefficient scheme management. The proposed system introduces a centralized digital platform with role-based access control, automated invoice generation, real-time margin calculation, multilingual support, and zone-based scheme visibility. The application is developed using React.js, Node.js, PostgreSQL, and modern frontend technologies to ensure scalability and high performance. The system enhances transparency, reduces manual effort, improves retailer engagement, and supports secure business operations in the distribution ecosystem.

Keywords: B2B Platform, Supply Chain Management, Scheme Management, Role-Based Access, Invoice Automation

I. INTRODUCTION

The distribution industry requires efficient communication between companies, distributors, sales representatives, and retailers. Existing systems often depend on manual operations through WhatsApp, phone calls, and paper-based invoices, which lead to communication gaps and operational inefficiencies. Scheme Villa is proposed as a centralized platform to digitize the supply chain process and provide secure, automated, and transparent management of promotional schemes, orders, invoices, and notifications. The system supports multilingual access and zone-based scheme visibility to improve retailer engagement and business productivity.



II. METHODOLOGY

The development of Scheme Villa follows an Agile Software Development approach to ensure continuous improvement and modular implementation. The system is designed with role-based architecture where administrators, distributors, sales representatives, and retailers are provided controlled access according to their responsibilities. The methodology includes requirement analysis, frontend and backend development, database integration, testing, and deployment. Offline scheme viewing and WhatsApp integration are implemented to support field operations and improve communication.



Fig. 1: Proposed Methodology Flow

III. MODELING AND ANALYSIS

Scheme Villa uses a centralized database architecture to manage retailer information, schemes, orders, invoices, and notifications. PostgreSQL is used for secure and scalable data management, while Node.js APIs handle communication between frontend and backend systems. The application supports real-time order tracking, automated invoice generation, and zone-specific scheme access. The implementation reduces manual workload and improves transparency within the distribution network.

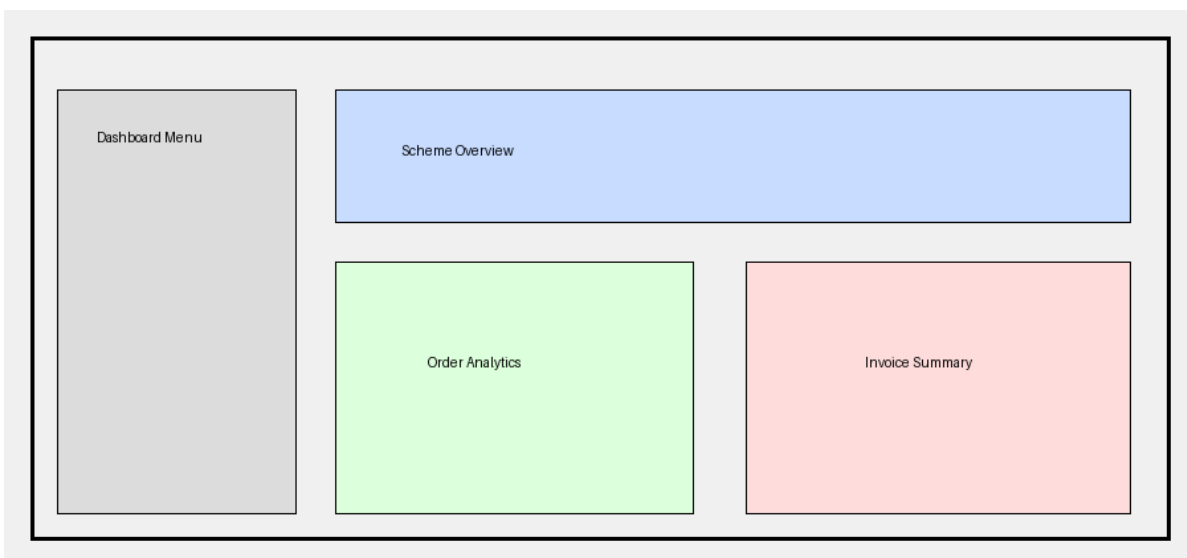


Fig. 2: Dashboard Interface of Scheme Villa



IV. RESULTS AND DISCUSSION

The implementation of Scheme Villa significantly improves operational efficiency compared to traditional supply chain systems. The system automates order processing, invoice generation, and scheme visibility while ensuring secure retailer data access. Retailers can calculate margins in real time and place orders directly through the platform. Distributors benefit from reduced manual effort and better order management. The platform also improves transparency and reduces human errors through automation.

Feature	Existing System	Scheme Villa
Communication	Manual	Centralized Platform
Invoice Generation	Manual	Automated
Data Security	Low	Role-Based Secure Access
Order Tracking	Difficult	Real-Time

V. CONCLUSION

Scheme Villa provides a secure and scalable solution for modernizing B2B supply chain management. The platform successfully digitizes scheme management, order processing, invoice generation, and communication between stakeholders. The use of modern technologies ensures system reliability, performance, and scalability. Future enhancements such as AI-based analytics, logistics tracking, and payment integration can further improve the platform.

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PostgreSQL Official Documentation.

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