

Inventory Management Using API

Mrs. Dharaniya, Mr. Nesly Jeniston M, Mr Partha Sarathi K ,Mr Rethina Prakash KS ,Mr Sagar M

¹ Assistant Professor, Dept Of Information Technology, Sri Shakthi Institute Of Engineering And Technology.

² Dept Of Information Technology, Sri Shakthi Institute Of Engineering And Technology.

³ Dept Of Information Technology, Sri Shakthi Institute Of Engineering And Technology.

⁴ Dept Of Information Technology, Sri Shakthi Institute Of Engineering And Technology.

⁵ Dept Of Information Technology, Sri Shakthi Institute Of Engineering And Technology.

Abstract - This project focuses on designing and developing an Inventory Management System (IMS) using RESTful APIs. The main goal is to simplify inventory operations by automating key tasks and giving users complete control—without using any artificial intelligence (AI) features. Instead of relying on predictive algorithms, the system uses clear rule-based automation to handle stock updates, shipment tracking, and reporting. This makes the solution easy to understand, reliable, and simple to maintain. It is especially suitable for small to medium-sized businesses that value transparency, accuracy, and straightforward troubleshooting in their daily inventory workflows..

1. INTRODUCTION

Traditional inventory management methods often depend on manual entries, spreadsheets, and basic software, which struggle to scale and adapt as business needs grow. In contrast, API-based systems offer a modern solution by allowing seamless electronic communication between different inventory-related applications. The system proposed in this project uses rule-based logic—such as stock level alerts and automated report generation—instead of AI-driven predictions or learning models. By avoiding AI, the solution remains simple, transparent, and easier to manage, making it ideal for users who prefer straightforward systems or are not comfortable relying on artificial intelligence.

2. Body of Paper

With supply chains becoming more complex and businesses requiring instant visibility into their operations, the need for advanced inventory management systems has grown significantly. An API-driven Inventory Management System (IMS) meets these demands by providing a modular, scalable, and secure way to access and manage inventory data. Using RESTful API endpoints, stakeholders—including warehouse managers, sales teams, and suppliers—can efficiently monitor stock levels, update records, and retrieve insights in real time. This ensures faster decision-making, improved coordination across departments, and more reliable inventory control.

The system architecture is built around REST APIs, which clearly define functions for essential operations such as adding, updating, and deleting inventory records. Automated notifications are triggered when stock levels fall below predefined thresholds, helping users respond quickly to low-inventory situations. The system can also generate sales, purchase, and stock-movement reports as needed.

The backend is developed using JavaScript and TypeScript. JavaScript enables dynamic and responsive web interactions, while TypeScript ensures reliability through strict type checking and early error detection. All API endpoints operate with full transparency. If reorder logic is required, it follows fixed user-defined rules—such as sending alerts when quantity drops below a set value—rather than AI-based forecasting. This approach ensures that system behavior remains clear, easy to track, and simple to maintain.

The system supports integration with barcode scanners and third-party Point-of-Sale (POS) systems, enabling efficient real-time inventory updates without reliance on advanced AI algorithms. Report generation and stock operations are handled through stored procedures to keep the solution lightweight, fast, and reliable. User roles, authentication, and access privileges are managed using standard security methods such as API keys, tokens, and defined permission levels.

Fig -1: Dashbord

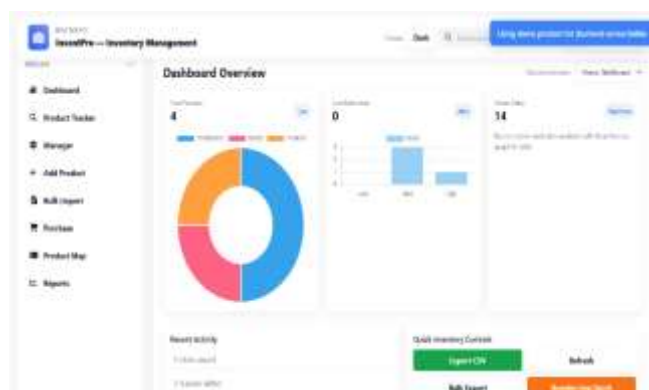




Fig -2: Product Tracker



Fig -3: Add Product Details



Fig -4: Report Page

3. CONCLUSIONS

Building an Inventory Management System using APIs—while intentionally avoiding AI components—provides major advantages for businesses that value control, clarity, and reliability. By relying on rule-based logic and user-defined settings, the system remains fully transparent and easy to monitor. This ensures faster troubleshooting, better accountability, and reduced complexity, making it ideal for organizations with simple operational workflows or strict compliance and audit requirements.

As technology continues to evolve, maintaining a clear distinction between rule-driven automation and AI-powered decision-making becomes increasingly important. For businesses that prioritize simplicity, security, and regulatory compliance, this approach ensures consistent performance without the unpredictability or oversight concerns associated with AI-generated decisions.

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REFERENCES

[1]."Effective Inventory Control and Management" by Ramesh V. Patel . This book provides practical insights into managing inventory using systematic methods, including manual and computerized tracking. It explains core concepts like stock levels, order points, and item categorization, offering a strong foundation for building non-AI inventory solutions.

[2]."Database Systems for Business Applications" by Neha S. Agarwal. This source covers the use of SQL databases for storing and managing inventory records. It guides readers on implementing CRUD (Create, Read, Update, Delete) operations, securing data access, and maintaining consistency in business applications—key elements for API-based inventory management.

[3]."Web Application Development with Java and REST APIs" by Sandeep Kumar. A practical guide on building scalable web applications with Java and RESTful APIs. It covers API creation, security techniques, and client-server communication, making it useful for developers constructing robust inventory systems without relying on AI automation.