



INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

“Inventra”

“Turning Data into Decisions for Better Business.”

Prof. Mrs. R. J. Dhanal

Shreyash Bhosale, Rohan Konduskar, Shrivardhan Patil, Mayuresh Naik, Bhaskar Barge
Department of Computer Science and Engineering
D Y Patil College of Engineering and Technology, Kolhapur, India

Abstract: The Sales and Expense project is a web-based application designed to enhance business efficiency by automating sales and purchase processes. Utilizing advanced web scraping techniques, the platform aggregates and analyzes data from various sources, ensuring accurate and up-to-date financial insights. A secure admin login system provides authorized users access to a centralized interface for monitoring real-time sales, tracking expenses, and generating detailed reports.

By reducing manual data entry and minimizing errors, the application streamlines financial management and supports better decision-making. Its robust analytics features allow administrators to assess performance trends and optimize operations. This project empowers businesses with efficient tools and actionable insights, fostering improved profitability and operational control.

1. INTRODUCTION

The Sales and Expense project is an innovative web-based platform developed to simplify and optimize sales and purchase processes for businesses. This application incorporates advanced web scraping technologies to gather and analyze data from multiple sources efficiently. Equipped with a secure admin login system, it offers authorized personnel access to a centralized dashboard where they can oversee real-time sales data, monitor expenses, and produce detailed financial reports.

By automating data collection, the system minimizes manual errors and enhances accuracy, providing businesses with reliable financial insights. This enables better decision-making and supports strategies aimed at boosting profitability.

The admin portal acts as a secure gateway, ensuring that only authorized users can access critical financial information. Administrators can leverage comprehensive analytics and track performance trends over time. The integration of web scraping tools streamlines data collection, eliminating the need for manual input and reconciliation, thereby saving time and resources. Overall, this project delivers actionable insights and robust financial management capabilities, making it an indispensable resource for businesses aiming to improve operational efficiency.

I. EASE OF USE

The Sales and Expense project is designed with a strong focus on user-friendliness, ensuring it is both accessible and efficient for businesses of all sizes. The platform features an intuitive interface, enabling users to navigate seamlessly and access a centralized dashboard without requiring technical expertise. A secure admin login system ensures that only authorized individuals can handle sensitive financial data with ease and

confidence. By utilizing advanced web scraping technology, the system automates data collection, eliminating manual input, saving time, and minimizing errors. It provides real-time insights and allows for the generation of detailed financial reports quickly and efficiently. Furthermore, the platform is highly scalable, making it adaptable to the needs of both small enterprises and larger organizations. These features combine to simplify financial management processes, enabling businesses to focus on growth and make well-informed decisions.

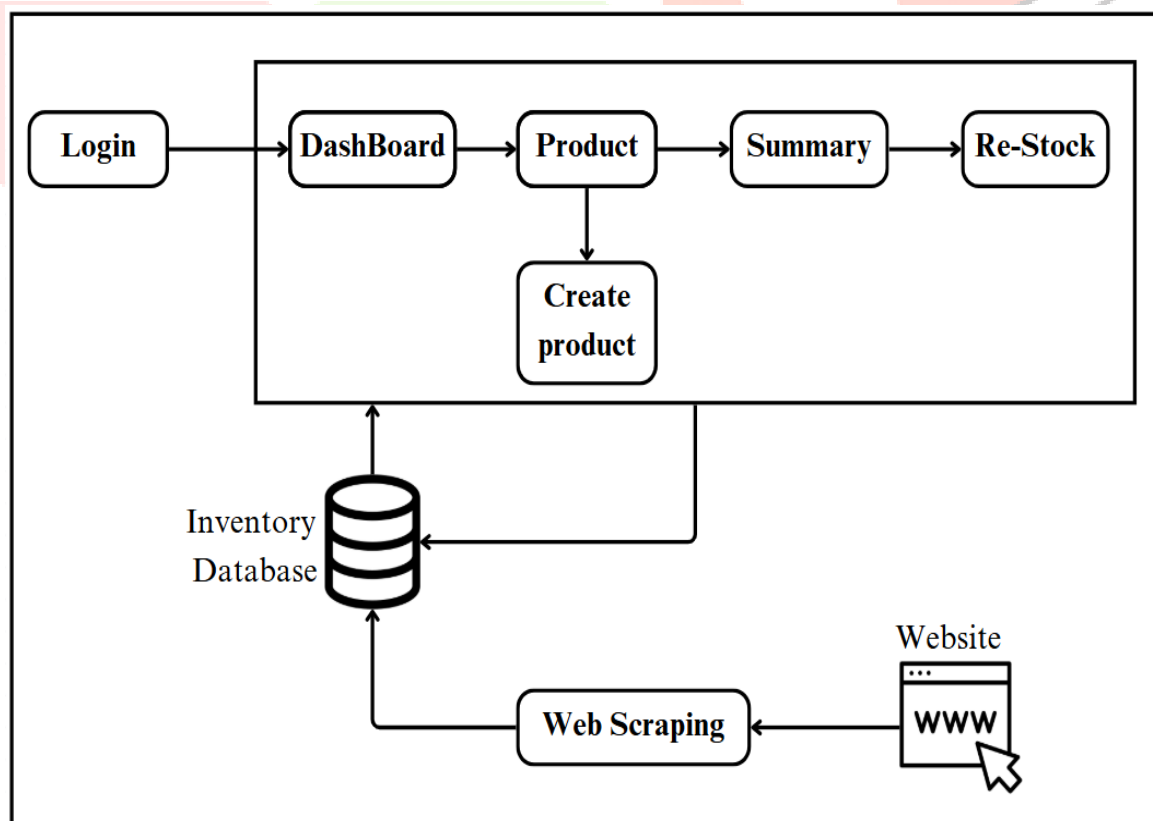
2. Data and Sources of Data

The Inventra project collects data from a variety of sources to deliver accurate financial tracking and actionable insights. By combining internal data, external market information, and automated collection methods, the platform offers a complete view of a business's sales and expenses. It integrates manual inputs and automation to reduce errors and streamline decision-making processes.

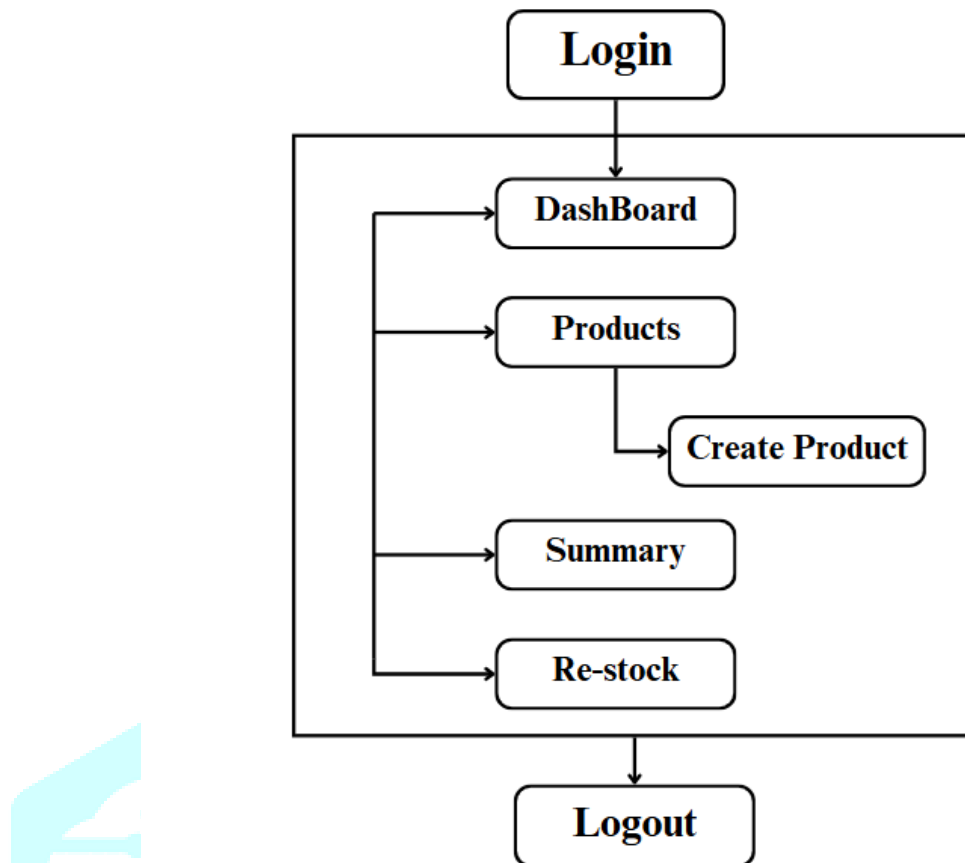
- **Sales Data:** Includes transaction details, revenue, product performance, and customer activity, sourced from point-of-sale systems and online sales platforms.
- **Expense Data:** Tracks operational costs like inventory, utilities, and payroll, retrieved from accounting software, supplier records, and invoices.
- **Market Insights:** Gathers competitor pricing, industry trends, and market benchmarks using web scraping tools and external analytics platforms.
- **Financial Reports:** Automates the creation of financial summaries, including income statements and cash flow reports, by integrating with ERP and accounting systems.
- **Manual Data Input:** Allows businesses to upload essential records, such as invoices and bank statements, for enhanced customization and accuracy.

2.1 Theoretical framework

2.1.1 Block diagram



2.1.2 Flow chart



2.1.3 Factors specification

1. Login & Authentication

This module provides secure access for owners, ensuring the platform is protected.

- Admin Login: Allows users to log in securely using their credentials.
- Role-Based Access Control: Assigns different permissions based on user roles, such as admins
- Authentication System: Integrates with Firebase Authentication to support multiple login methods, including email.
- Session Handling: Utilizes secure tokens to maintain active sessions, ensuring persistent login and protecting user data across sessions.

Technologies Used: Next.js, Node.js, JWT.

2. Inventory Database Module

This module serves as the backbone for managing and organizing inventory-related data efficiently.

- Centralized Storage: Maintains a unified database for all products, expenses, and inventory records, ensuring seamless data organization.
- Efficient Data Management: Utilizes a relational database management system to enable quick data retrieval, updates, and scalability for growing inventory needs.

Technologies Used: PostgreSQL, Prisma ORM.

3. Dashboard Module

This module offers a centralized view of key metrics and essential information for efficient business management.

- Centralized Dashboard: Displays real-time statistics related to sales, expenses, inventory levels, and other critical business metrics in a clear and organized layout.
- Quick Navigation: Provides easy access to various sections of the platform, including detailed pages for products, sales data, purchase history, and financial summaries.

- **Key Metrics:** Highlights performance indicators such as revenue trends, cost analysis, profit margins, and stock levels for quick decision-making.

Technologies Used: Next.js, Material UI, Tailwind CSS.

4. Products Management Module

This module allows efficient handling of inventory, ensuring accurate tracking and management of products.

- **Product Display:** Shows a comprehensive list of all products available in the inventory, including details such as name, quantity, price, and category.
- **Add Products:** Enables users to add new products to the inventory with relevant details for streamlined tracking.
- **Search Products:** Provides a robust search functionality to quickly locate products in the inventory based on keywords, categories, or other criteria.

Technologies Used: Next.js, Material UI, Node.js, Prisma ORM.

5. Summary Module

This module provides an overview of inventory and financial performance, offering valuable insights for decision-making.

- **Expense Tracking:** Monitors and manages inventory-related expenses, including procurement and operational costs.
- **Financial Insights:** Generates detailed analytics and summaries, highlighting key trends and metrics to optimize inventory management and improve cost efficiency.

Technologies Used: Next.js, Node.js, Prisma ORM.

6. Re-stock Module

This module helps businesses efficiently manage inventory levels by monitoring stock status and facilitating restocking processes.

- **Product Name:** Identifies and lists popular products in the inventory by name for clear reference.
- **Stock Quantity:** Displays total stock levels for each product to help assess restocking needs.
- **Restock Quantity Management:** Enables users to specify the required restock quantity for products running low, ensuring optimal inventory levels are maintained.

Technologies Used: Next.js, Node.js, Prisma ORM.

7. Web Scraping Module

This module automates data collection from external sources to enhance inventory and market analysis.

- **Data Scraping:** Extracts product information, pricing, and competitor insights from external websites to stay updated with market trends.
- **Database Integration:** Automatically updates the inventory database with relevant scraped data, ensuring accuracy and reducing manual input efforts.

Technologies Used: Node.js, PostgreSQL, Prisma ORM.

3. RESEARCH METHODOLOGY

1. Requirement Analysis

- Analyze the needs of businesses for streamlined sales and expense management, focusing on essential features such as secure login, centralized dashboard, inventory database management, and web scraping for market analysis.
- Conduct user surveys and feedback sessions to understand expectations, emphasizing automation, real-time updates, scalability, and ease of use.

2. System Design

- Develop a modular architecture with Next.js for the frontend and Node.js for the backend, ensuring seamless integration and efficient operation.
- Design intuitive dashboards and workflows to manage products, inventory, financial summaries, and restocking processes.
- Establish secure and scalable database models using PostgreSQL and Prisma ORM to handle sensitive inventory and financial data.

3. Module Development

- Implement secure authentication using JWT and PostgreSQL to protect user access and sensitive data.
- Build modules for product management, inventory tracking, financial summaries, restocking, and web scraping.
- Integrate advanced search and filtering mechanisms to enhance the usability of the product management module.

4. Integration and Testing

- Perform rigorous testing of individual modules and the complete system to validate functionality, security, and usability.
- Use automated testing tools and manual reviews to identify and address potential issues.

5. Deployment

- Deploy the application on reliable cloud platforms such as AWS or Google Cloud to ensure high availability and scalability.
- Test the system in a live environment to identify and resolve deployment challenges, ensuring cross-browser compatibility and performance optimization.

6. Monitoring and Updates

- Utilize analytics tools like Tableau and server monitoring systems to track application performance and user behavior.
- Implement regular updates to address bugs, improve features, and incorporate user feedback, ensuring continuous improvement and user satisfaction.

3.1 Conclusion

In conclusion, this project offers businesses a comprehensive solution for managing sales, expenses, and financial reporting. By integrating diverse data sources including internal systems, web scraping, third-party APIs, and manual inputs the platform ensures accurate and timely financial insights. This approach not only reduces the potential for errors but also enables businesses to make informed decisions based on real-time data. With its user-friendly interface and scalable design, the system empowers businesses of all sizes to streamline their financial management, optimize operations, and ultimately drive growth and profitability.

3.2 References

1] Optimizing E-Commerce Decision Making Using Web Scraping by Aryaman Singh Chandrawat, Nawal Kumar, Vaibhav Bohra, on May 03, 2024.

<https://www.techrxiv.org/doi/full/10.36227/techrxiv.171470535.53161732>

2] Influence of Inventory Management on Sales Growth of Food and Beverage Manufacturing Companies in Nigeria by Akinlabi, B. H.; Sonko, M. L. , Department of Business Administration & Marketing, School of Management Sciences, Babcock University, Ilishan Remo, Ogun State, Nigeri ,October 2021.

<https://www.ijtsrd.com/papers/ijtsrd47615.pdf#:~:text=The%20findings%20revealed%20that%20inventory%20management>

3] Inventory management concepts and implementations: a systematic review by J.B. Munyaka¹ & V.S.S. Yadavalli , South African Journal of Industrial Engineering, July 2022.

4] Simulation of inventory management systems in retail stores: A case study by Puppala Sridhar , C.R. Vishnu , R Sridharan , June 2021.

<https://www.sciencedirect.com/science/article/abs/pii/S2214785321039080>

5] Research paper on Inventory management system by Punam Khobragade , Roshni Selokar, Rina Maraskolhe, Prof.Manjusha Talmale, International Research Journal of Engineering and Technology (IRJET),April 2020.

<https://www.irjet.net/archives/V5/i4/IRJET-V5I448.pdf>

