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BizMaster: Business Management Application Using Flutter

Dr. Sunil Wankhade[1], Siddh Barbhaya[2], Sanika Harad[3], Apoorva Nikam[4], Ankita Rajhans[5]
[1,2,3,4,5]*MCT's Rajiv Gandhi Institute of Technology, Mumbai – 400053*

***Abstract*—This project aimed at building a complete Business Management Application on Flutter with native-like performances on all Android devices using the same code as well. The key purpose of the application is to automate basic business processes including inventory, sales monitoring, CRM and Financials in one frame so that admin can easily add products as well set up with understanding reports & Taxes. Businesses can monitor stock levels, track orders all in real time and execute effective supply chain management using the inventory management feature Part of the sales process, the Sales Tracking module gives users access to live data about their sales and helps them see trends easily so they can forecast more accurately. The other crucial feature is CRM functionality, which allows companies to foster close client relationships using detailed interaction records and personalized communication tools for more effective loyalty management. It provides an overview based on the financial analysis features such as visual reports, profit and loss statements, budget tracking to is able for managers with data-driven decisions. Built with Flutter, the application delivers a continuous user experience which let users navigate and access features effortlessly on any Android ecosystem. In simple, this application will enable a business to become more productive with comprehensive tools that manage their operations well, increase customer interaction, be transparent in financials and also keep user-handle on all modern Android devices.**

***Index Terms*—Business Application, Social Media Apps, Flutter App, Dart, Android Applications, CRM, Productivity App, ERP, Flutter UI/UX, Business Analytics, Mobile App, Business Management.**

I. INTRODUCTION

The Business Management Application is crafted to meet the intricate needs of contemporary organizations by providing a cohesive and efficient platform for overseeing various business processes. Utilizing Flutter for the frontend allows us to create a high-performance, cross-platform application with a single codebase, ensuring a smooth experience across Android devices. The extensive range of customizable widgets in Flutter enables us to design a visually appealing and highly responsive user interface, significantly enhancing the overall user experience. This means that businesses, regardless of their size or sector, can utilize a robust tool that simplifies their daily operations.[1] The application will include two separate login systems: one for Business Admins and another for Business Users. This setup ensures that each user group has access to the features and functionalities that suit their roles. Admins will have comprehensive control over the system, overseeing user management, resources, and business analytics, while Business Users will be able to utilize the tools that are pertinent to their specific responsibilities. This clear separation enhances security, preserves data integrity, and boosts efficiency in business operations by providing varying levels of access and control tailored to the distinct needs of each user group. By utilizing Flutter Express.js and PostgreSQL, our Business Management Application becomes a robust, scalable, and user-friendly solution, crafted to meet the dynamic demands of business management.[7] The platform empowers businesses to enhance efficiency, optimize operations, and maintain a competitive edge in a rapidly evolving digital landscape.

II. LITERATURE SURVEY

A comprehensive review of existing literature reveals different approaches and technologies that have been used to create effective business management applications. Previous research underscores the significance of integrating scalable database systems, fine-tuning API interactions, and boosting user experience with user-friendly frontend designs. It also highlights the importance of secure authentication,

real-time data syncing, and automation in streamlining business operations. Moreover, the progress in Flutter Technology has played a key role in enhancing decision-making and operational efficiency. By examining these established methods, this study seeks to build on successful strategies and adapt them to improve CRM, inventory management, sales tracking, and customer engagement within the business management system.

III. PROPOSED SYSTEM

The proposed Business Management Application using Flutter involves several steps, including defining objectives, setting up the frontend and backend, deployment etc. The following is a detailed description of each step:

1. Define Objectives: Determine the business management objectives of the app. Point out the features and modules you need (sales tracking, customer management, inventory/warehouse handling).
2. Architecture Design: Architect the system, including building out both frontend (Flutter) and backend (Express.js), and database (PostgreSQL). [9]
3. Set Up Development Environment: Set up Flutter SDK, Develop API endpoints with Express.js, define Prisma schema, and set up authentication(JWT).
4. Frontend Development: Create the UI for Each Module. Get extra functionality with Flutter packages(State Management, HTTP request…).
5. Backend Development: Set up the Express server. Create the RESTful APIs in each module – Sales, Inventory, Customer and Employee. The backend development stage focuses on building a secure, scalable, and efficient API using Express.js with Prisma ORM and PostgreSQL for the database.
6. Testing: Testing of various interactions between the frontend and backend. Along with it, testing whether the API's are correctly responding to the requests.
7. Deployment: Deploy or publish this flutter application as a web app.
8. Maintenance: Regularly check for updates and maintenance issues. Solve errors or fix bugs if any for systematic implementation of the project.
9. Documentation: Choose a suitable loss function, such as binary cross-entropy, for binary classification.
10. Project review: List down the area of improvements for future development. Make sure if all the objectives have met the need of the project.
11. Ethical Considerations: Be aware of the ethical implications of your work and consider potential misuse of your system.

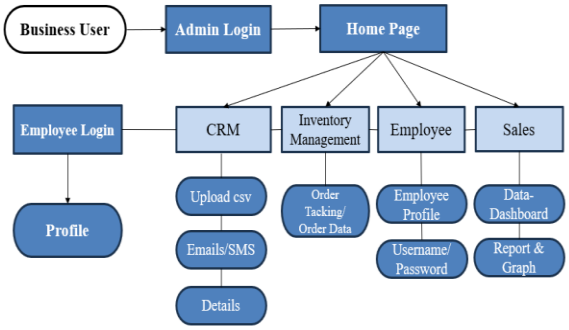

Fig.1: System Flow of Business Management Application

Module-wise description is given as follows:

1. Admin Login: The business owner can use this login portal for signing-in and for management, tracking of their businesses. A business owner can have multiple businesses and keep a track record of them all. The business owner can access all the modules such as customer relationship management (CRM), Inventory management, Employee management, Sales tracking, etc.
2. Employee Login: The employees working in the business ventures can login via this portal in order to keep a track record of customer data, analyzing various trends and handling customer relationship management to stay updated with the current market patterns.
3. Customer Relationship Management (CRM): It contains all the customer-related data and handles various features such as sending alerts about latest trends or any updates regarding sales. It also focuses on the digital

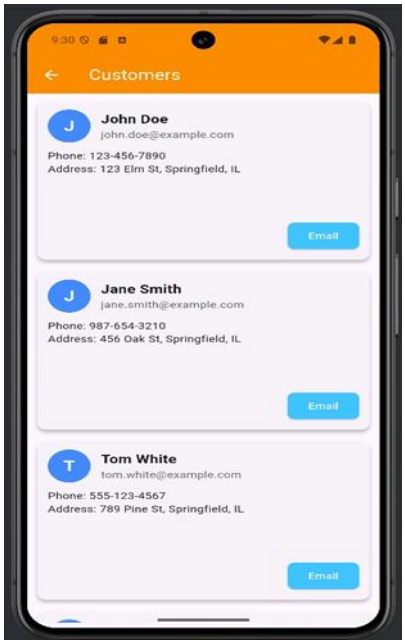

Fig.2: Customer Management Page

marketing aspect while maintaining the customer management to drive a large amount of audience. This module helps to manage all customer related operations efficiently. Employees have access for this module.[10]

4. Inventory Management: It contains data about the resources required for a particular business. With the help of this module, business owners will be able to keep a track record of all the supplies needed in a venture and also about their transitions. Tracking of supplies and resources becomes easier with the implementation of this module efficiently.

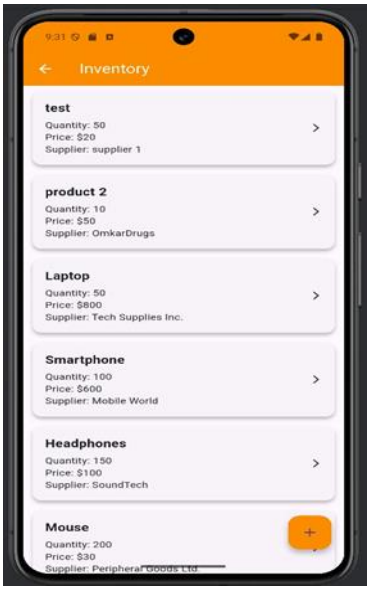

Fig.3: Inventory Dashboard

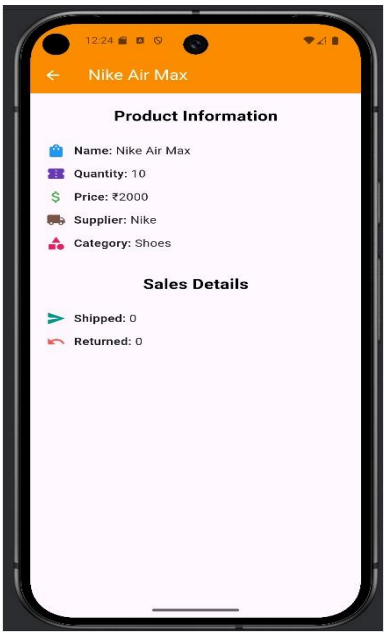

Fig.4: Product Information & Sales details

5. Employee Management: All the employee related data can be reliably and efficiently handled with the intervention of this module. It contains data such as joining date of employees, departure dates, salary information, leaves and paid leaves related information.[5] It becomes easier for business owners to manage and handle all the employee information. It also includes a QR based attendance system where the attendance of the employees can be marked by scanning the QR code.

6. Sales Tracking: This module helps to keep a track of the sales analysis related to the business. It accounts for the amount of sales done, profit, loss etc. Its helps to keep insights about the latest market trends and systematic analysis of data by driving insights of the sales data.

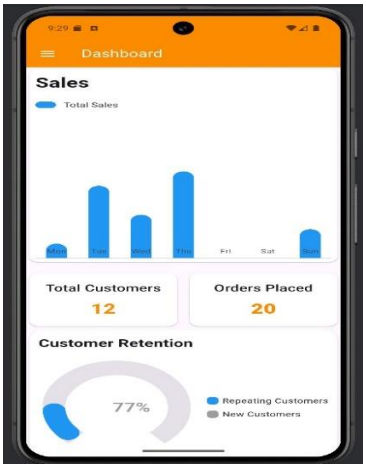

Fig.5: Sales Dashboard

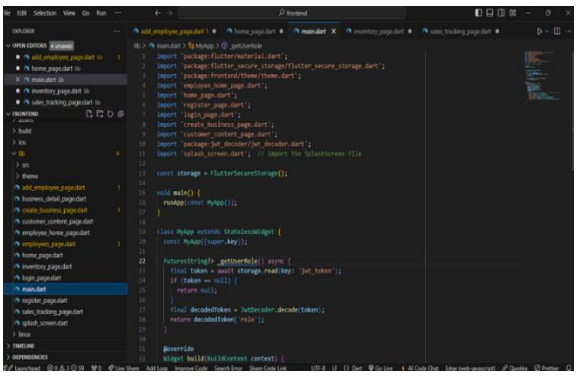

Fig.6: main.dart file

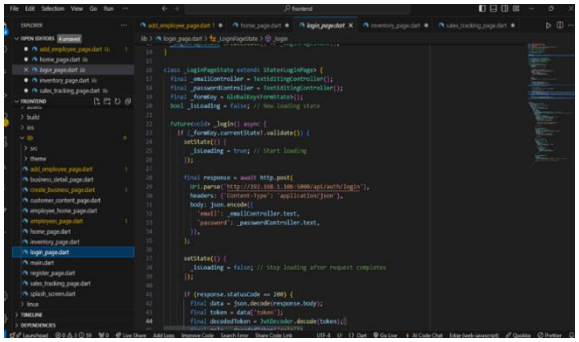

Fig.7: Login page.dart file

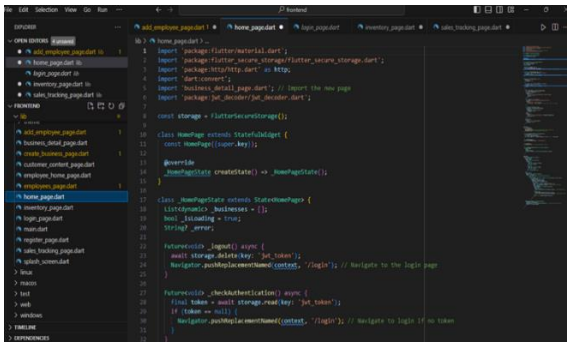

Fig.8: home page.dart file

IV. BUSINESS MANAGEMENT APP USING FLUTTER:

Flutter: Flutter is a powerful material design UI toolkit which provides a great support to develop an efficient business management solution across various platforms. Flutter enables businesses to target the Android and iOS platform, as well as the web, using a single codebase and without dedicated applications. The real-time development frameworks such as Hot Reload retain the testing systems faster and enable developers to hone the uncomplicated fragment of an app, like business management tools – dashboards and data visualizations.

Key advantages include:

- Cross-Platform Consistency: The single code means that development is easier and more efficient; end-users are presented with the same interface no matter the device they are using.
- Optimized Performance: Local compilation enables efficient execution of operations, particularly for data-dependent processes, suitable for managing extensive stock, customers' database, and analytics applications.
- Flexible, Scalable UI: The format of the widget-based system allows the business to make modifications and adjust the look and feel of the interface as the business evolves.
- Built-in Widget Structuring: All the Flutter applications are based on widgets those actually constitutes up to basic organ of UI development. These pre-designed widgets cover all the structural elements like buttons, text and layouts or styling from simple to pretty complex ones that can be styled for better responsiveness of developing UIs. [11]
- Hot Reload: One of the cool features in flutter where, we can change our source code and see the output directly without restarting app. It boosts developer productivity for they can make modifications and iteratives in real-time.
- Strong Integration and Future Proofing: Flutter is designed to support back-end interfaces and several features that may be specific to a given platform, and this means that developers can easily integrate such elements as authentication, data storage, and third-party application programming interfaces.[8] Thanks to Google support, flutter in turn is constantly evolving; thus, the application is compatible with new versions of OS, as well as current industry norms.

What's more, by using Flutter, businesses receive a strong and perspective solution perfect for optimizing work processes and improving customer experience across any platforms.

Dart Language: Dart is up-to-date programming language that Google came up with. It's mostly used to build those handy apps that work on all your gadgets, like your phone, computer, and the internet. What makes it even cooler is that it's best buds with Flutter,

which is like a big box of toys from Google that lets you make fancy user interfaces. It's got a way of writing code that's easy to get if you're already into JavaScript, Java, or C#. The big idea behind Dart is to keep things simple and quick, so you can make apps that run smoothly no matter where you use them. Dart has therefore turned into this fantastic tool for building super-speedy apps that work across different devices, all thanks to Flutter. With Google backing it and a dedicated community, it's becoming more popular by the day. It's like the Swiss Army knife for developers who want to make apps that can go anywhere.
Dart for Business Management Application:
Dart, especially when used alongside Flutter, provides a versatile foundation for business management applications. Here's an outline of how Dart enhances the development of these applications:
Cross-Platform Efficiency: Dart allows for a single codebase across platforms (iOS and Android), cutting down on development time and expenses since there's no need for separate native apps. This streamlined approach broadens the app's reach, making it suitable for various devices without extra coding efforts.[3]
High Performance: With Dart compiling to native machine code (e.g., ARM or Intel), applications handle intensive data tasks, such as financial tracking or customer data processing, without performance bottlenecks.
Hot Reload Feature: Dart's integration with Flutter enables "hot reloads," where code changes reflect immediately in the app. This capability shortens testing cycles, making it simpler to adjust features and enhancing responsiveness to the fast-paced needs of business environments.
Customizable UI for Analytics and Visualization: Dart's widget-based structure supports the creation of complex and tailored interfaces, helping to visualize key business metrics. Developers can design UIs to showcase specific data, such as inventory levels or sales trends, tailored to business requirements.
Backend Compatibility: Dart's versatility extends to backend integration, making it compatible with multiple databases (e.g., MongoDB) and APIs. This allows business management applications to integrate seamlessly with existing tools or cloud services, supporting data storage and retrieval in diverse environments.
Secure and Scalable Infrastructure: Dart's strong typing and asynchronous programming capabilities enable the building of secure, scalable applications. This robustness ensures data protection and reliability, especially important in managing sensitive business data, like customer information and financial records.[4]
Tools & Technologies Used:

- Hardware:
  OS: Windows 10 or higher
RAM: 4GB or higher
- Software:
  Visual Studio Code
Android Studio
- Front end technology:
  Flutter
- Backend technology:
Node.js
Express.js
Prisma
PostgreSQL

V. RESULTS AND DISCUSSION:

After successful implementation, the business management app can demonstrate the following outcomes:
Enhanced Operational Efficiency: By integrating key business functions (inventory, sales, CRM), the app allows businesses to manage their operations from one centralized platform.
Cross-Platform Accessibility: The single codebase reduces development time and provides a consistent experience on Android devices, with the potential for expansion to other platforms.
Real-Time Decision-Making: Real-time data syncing and updates ensure that business metrics are up-to-date, enabling faster, data- driven decisions.
Improved User Experience: Flutter's responsive widgets and customizable UI enhance the app's usability, reducing training time for new users.
Scalability: Scalability in the backend, using Express.js and Prisma ORM, ensures the system can handle increased user traffic, data volume, and concurrent requests efficiently. Prisma ORM optimizes database performance with connection pooling, efficient indexing, and query caching, ensuring fast data retrieval even with large datasets.[6]

Fig.9: Application Business Owner Login

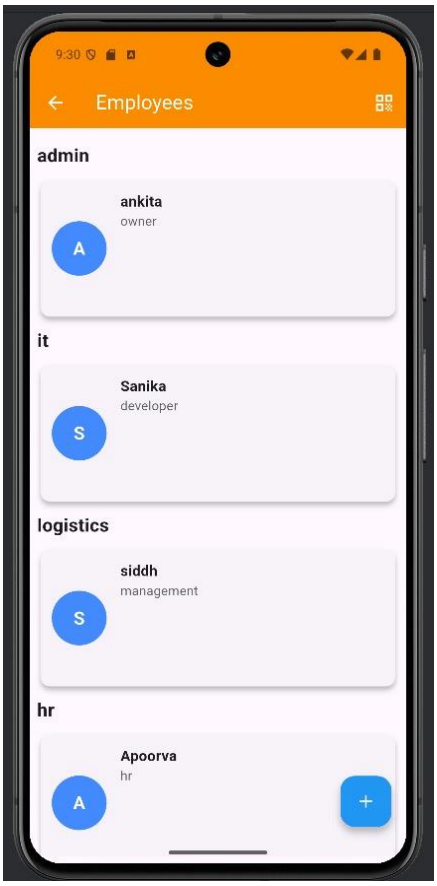

Fig.11: Employee Module

Fig.10: Application Dashboard

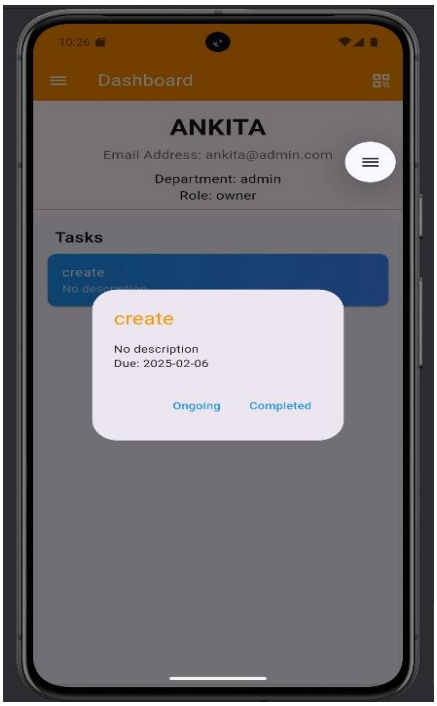

Fig.12: Employee Login dashboard

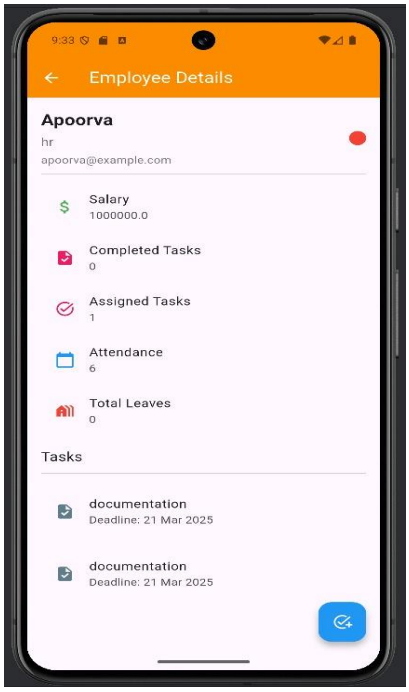

Fig.13: Employee Details

Fig.14: QR based Attendance Scanner

VI. CONCLUSION:

In conclusion, this research presents the development of a Business Management App using Flutter a powerful and efficient solution for modern organizations aiming to streamline their operations across various areas such as sales, inventory, customer relationships, and finances. By taking advantage of Flutter's cross-platform capabilities, businesses can create a scalable and responsive application that functions seamlessly on Android and other platforms with minimal code duplication. The selection of Flutter, paired with strong backend solutions like Prisma, guarantees that the app remains adaptable and capable of addressing the complex requirements of different industries. With the ability to incorporate future technologies such as AI, machine learning, and cloud services, this app can keep evolving to meet the increasing demands of businesses.[2] Although there are challenges in managing scalability, security, and platform-specific features, Flutter's expanding ecosystem, extensive library of customizable widgets, and high-performance architecture make it an excellent choice for business applications. Ultimately, this solution not only enhances productivity and decision-making but also positions businesses to scale effectively in a rapidly digitalizing world.

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