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DigiVyapaar

A Mobile-Centric, Offline-First Approach to Inventory and Billing Management for Small Enterprises

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Abstract: Small and medium-sized companies (SME), especially in development areas, continue to meet important challenges in using digital businesses for business operations. Most commercially available billing and inventory management systems are either membership-based, cloud-agent or a level of technical expertise requires a level of technical expertise that lacks many business owners[2][4]. These obstacles contribute to journal maps, delayed invoices and inability to monitor stock levels or outstanding payments. The concept recognized this difference and was conceptualized and developed as a mobile-first solution for the purpose of making the daily business administration more accessible, reliable and expensive for local enterprises.

DigiVyapaar is a native Android application created using Java in Android Studio after MVVM (Model -View -View-Model) architecture. It integrates the automatic generation of the PDF bill in inventory management, customer and supplier profile management, Challan, partial and full payment tracking, and an integrated, offline-competent platform [5]. The data is stored locally using the endurance library in the room, which ensures uninterrupted or unstable internet connection, also ensures uninterrupted access to commercial items.

The system was developed using a modular approach, which was processed through informal testing and recurrent cycles of the user response. The application supports overall main structures to avoid repetition during invoicing, provides real time with low stock notification and maintains a transaction logger classified by payment mode (cash, UPI, credit or bank transfer). These properties directly address operating pain that is often seen in small retail communities [2][5].

Index Terms **-** Inventory Management, Android Application, Room Database, Billing System, MVVM Architecture, Partial Payments, Offline-first App, DigiVyapaar

I. Introduction

1.1 Background

In today's digital age, small and medium -sized companies (SMBs) are looking for innovative methods of streamlining operations, promoting efficiency and remaining competitive in the rapidly changing market. Traditional methods for handling invoices, invoicing and customer entrepreneurs are often exposed to manual, time-consuming and errors [1]. These disabilities can damage the profitability of a business, making SMB difficult to flourish.

To deal with these challenges, digital business management applications have become the necessary tools for small and medium -sized businesses. These apps help companies manage operations smoother and efficiently. DigiVyapaar is an Android-based application designed to meet the various SME requirements. It provides a comprehensive category facility for managing inventory, invoicing, transactions, customer and supplier profiles and financial items.

Unlike traditional business management systems, DigiVyapaar offers real -time updates, easy access and an intuitive interface that also makes it a user -friendly for those who are not technique lovers. The app contains important functions such as goods management with low stock alerts, a flexible invoicing system that supports both partial and full payment, a transaction book to track different payment methods and detailed customer and supplier profiles.

In addition, DigiVyapaar helps companies follow outstanding payments, whether money out of customers or payment due to suppliers, and secures a healthy cash flow [2][5]. It also provides a monthly sales overview and detailed laser report, which helps the business owners make informed decisions based on accurate and timely financial data. By automating these processes, DigiVyapaar improves operating efficiency, so that business owners can focus more on growth.

1.2 Problem Statement

The operation of a small or medium-sized business is its own set of challenges. Rare resources and dependence on manual procedures - for example, invoices can result in problems with expensive errors, slow collections and many payment options - maintain accounts. This disability does not just slow down things; They dry the cash flow and even affect customer relationships [4]. Without a single system, maintaining accurate mail for buyers and suppliers is a similar relevant problem, with potential opportunities for errors that need to be easily prevented.

1.3 Objectives

This study aims to develop an Android application that:
-Simplifies billing, inventory and transaction management for small and medium-sized companies (SME).
-Reduces the operational disruption to enable real -time retaining, low -warehousing notification and efficient warehouse treatment.
-Support partial and full payments through a flexible Challan system that improves the visibility of the cash flow and customer satisfaction
-Provides a safe and user-friendly platform that requires minimal technical knowledge and supports increasing business requirements [2][5].

1.4 Scope

The assignment pursuits to develop an Android-based totally application that enables small and medium-sized groups (SMB) efficiently dealing with invoices, invoices and payments. It helps offline functionality, which affords uninterrupted get right of entry to commercial enterprise operations without a regular internet connection. The predominant capabilities consist of notifications of low stock, partial and complete charge monitoring, PDF payments and generations of customer events. The app is light and designed for the user and it calls for minimum technical know-how. The primary intention is to reduce guide errors and streamline everyday operations for developing businesses.

II. Literature Review

Before we started developments on DigiVyapaar, we spent time seeing some existing software tools commonly used for invoicing and invoicing. Some famous people include Vyapar, Zoho Inventory, Tally ERP9 and Marg ERP9. These platforms are widely adopted by businesses of different sizes, and each gives its strength and limitations. We mainly reviewed them to see what users are struggling with, and we can create something simple and more sewn for local needs.

Zoho inventory

Zoho Inventory is more favorable for slightly large operations, including more Godowns or online sales. It is connected to platforms such as Amazon and Shopify, which is great for e-commerce, but also makes the Ui and Setup process more complicated. We noted that it focuses a lot on stock movement and order processing but does not do much when it comes to localized payment options such as UPI, which prefer many Indian dealers [2].

Marg ERP

Marg ERP is known for its use in retail and pharmaceutical regions. It has modules for everything - sales, purchases, inventory, accounts and even probation. But as tally, it is also stationary-focused and appears to be quite heavy for simple operations such as generating the bill or tracking the outstanding payments. We saw that even basic features require several stages, and this mobile first design is not considered [3].

Where DigiVyapaar stands out

While these apps are strong in some areas, we saw that none of them had offered a light, mobile-first solution:
Handle partial and full payment
Allow rapid generation and sharing of PDF bill
Provide a pure interface to those people without a technical background
DigiVyapaar is designed and holds these intervals in mind. We focused on the daily need for small business-like tracking of low stocks, managing pending payments without complicating the user experience. Since it works completely offline with the database in the room, there is no need for continuous connection, and the app stores everything locally.
In addition to spreading features in multiple apps or paid plans, DigiVyapaar tries to bring everything into a free app: Inventory, Billing, Customer Records, Outstanding Balances and a Transaction Book that also tracks different types of payment such as cash, UPI or bank transfer.
There is a minimum approach on the hands, which we think that makes DigiVyapaar more useful for small businesses we designed for it.

II. Methodology:

2.1 Technology Stack Used:

1. Platform - Android (native)

DigiVyapaar was originally developed for Android platforms, which are widely used throughout India, especially in small businesses. By choosing indigenous people's Android development, the application gains access to device level functions such as better performance, compatibility and device level functions such as file storage, camera integration (for future barcode support) and offline cache. The original approach also ensures even UI reproduction and accountability compared to hybrid options.

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2. Programming language - Java

The application is written in Java, a strong and object-oriented language that is officially supported by Android SDK. Java offers extensive libraries, built -in memorial management and a large developer society, making it ideal for creating scalable and maintenance Android applications. It is also well documented and compatible with devices such as rooms, retrofitting and Android Jetpack library, which was used in parts of the development process.

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3. Ide - Android Studio

Android Studio is an official development environment for the Android App Construction, and it provides integrated equipment such as a real -time setup editor, Build System (Gradel), Troubleshooting Opportunities and Virtual Units Emulator. It allows effective project management, testing at several API levels, and performance monitoring equipment, which together contribute to stable and adapted app development.

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4. Architectural pattern -MVM (Model -Siew -View)

MVVM architectonic patterns are used to dislike the user interface from business logic and data management. In DigiVyapaar, the model handles data access through the room, the View model process that argues for data and user interface and observes View Model for View (activities/pieces) updates. It increases architectural stability, encourages reuse and simplifies the test by distinguishing the responsibility in the composition of the app.

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5. Ui -component - XML Layout, Recyclerview, Material Component

The user interface is designed using the XML layout for stability in devices. Recycler view has been used to view dynamic lists such as customer profiles, products and transaction items. It also supports effective reproduction and memory use with large datasets. Material design components such as buttons, text fields and cards improve and feel the application appear, and ensure a modern, intuitive user experience while maintaining the UX/UX guidelines for Android.

6. Local database - room (built on SQLite)
The library in the room is used for local data firmness. This collection simply simplifies the interaction with the underlying SQLITE database by offering an abstract layer of query verification. Space institutions also support the relationship between life-data integration and migration strategies, which were important for handling complex billing and transaction functions. By storing data locally, DigiVyapaar ensures completely offline functionality, a significant requirement for the intended user base.

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7. Reactive component - Lividata, Viewmodel, Life Circle Component
These jetpack libraries enable lifestyle programming and reactive data processing. When the underlying database changes, the Life data automatically updates the user interface, while View-model holds the UI data in configuration changes such as the screen rotation. Lifestyle components ensure that supervisors and resources are automatically cleaned when the user interface is damaged, reduces memory leaks and improves app stability.

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8. PDF -Generation -ITEXT PDF -Library
To enable users to generate and share bills, the ITEXT PDF library was integrated for Dynamic PDF design. The library allows for accurate formatting, tabular data insert and logo -building, which enables professional invoice generations. PDF is stored locally and can be shared using Android's intention system, so that users can send them via e -post, message apps or printing services.

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9. Data Sharing and Storage - Internal Storage, FileProof
All files, including invoices and transaction logs, are stored safely in internal storage. Androids Fileprovids are used to provide temporary and secure access to these files when dividing with external applications. This prevents unauthorized access and ensures compliance with Android's scoped storage rules, especially in new Android versions (API 26+).

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10. Testing Tools – Emulator and Real Device Testing
Testing was performed both on emulators (like Pixel API 26 and Pixel API 34) and real devices to ensure UI responsiveness, compatibility, and stability across Android versions and screen sizes.

Performance Evaluation & Comparative Tables
We compared the performance of DigiVyapaar against traditional manual processes and some common billing tools used by small businesses [2][5].

Criteria	Manual Billing	Existing Tools (Vyapar, Marg)	DigiVyapaar
Partial Payment Handling	Manual tracking	Limited/paid features	**Fully supported**
Outstanding Payment Visibility	Separate record needed	Available, but buried in options	**Real-time and easy to view**
Offline Functionality	Fully offline	Mostly cloud dependent	**Fully offline**
Ease of Use for Non-Tech Users	High learning curve	Moderate	**Simple and intuitive**
Data Loss Risk	High (no backup)	Low (cloud)	**Low (local Room DB)**

Criteria	Manual Billing	Existing Tools (Vyapar, Marg)	DigiVyapaar
Customization Flexibility	Manual only	High (but complex)	**Balanced and focused**
Device Compatibility	Not applicable	Mostly desktop-first	**Mobile-first, Android API 26–34 tested**

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