IJIREEICE ISSN (O) 2321-2004, ISSN (P) 2321-5526

International Journal of Innovative Research in Electrical, Electronics, Instrumentation and Control Engineering

Impact Factor 8.414 ⁜ Peer-reviewed & Refereed journal ⁜ Vol. 14, Issue 3, March 2026

DOI: 10.17148/IJIREEICE.2026.14394

Android-Based Inventory Management System

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Abstract: Inventory management is an essential process in businesses and organizations for tracking products, materials, and stock levels. Traditional inventory systems often involve manual record keeping, which may lead to errors and delays. Android-based inventory management systems provide a simple and efficient solution using smartphones and mobile applications. These systems help users manage stock information, update records in real time, and improve operational efficiency. This paper discusses the working, features, advantages, applications, and future scope of Android-based inventory management systems[1][2].

I. INTRODUCTION

Inventory management refers to the process of storing, tracking, and controlling goods or materials in an organization. Proper inventory management helps businesses avoid stock shortages, reduce losses, and improve productivity.

With the growth of mobile technology, Android applications are widely used for inventory management because Android devices are affordable, portable, and easy to use. Android-based inventory systems allow users to update stock details, scan barcodes, and generate reports directly from mobile devices[1][4].

These systems are commonly used in:

- Retail stores
- Warehouses
- Hospitals
- Agricultural sectors
- Educational institutions
- Manufacturing industries

II. OBJECTIVES OF THE SYSTEM

The main objectives of an Android-based inventory management system are:

- To maintain accurate inventory records.
- To reduce manual paperwork.
- To provide real-time stock updates.
- To improve efficiency and productivity.
- To minimize inventory errors.
- To support mobile access anytime and anywhere.

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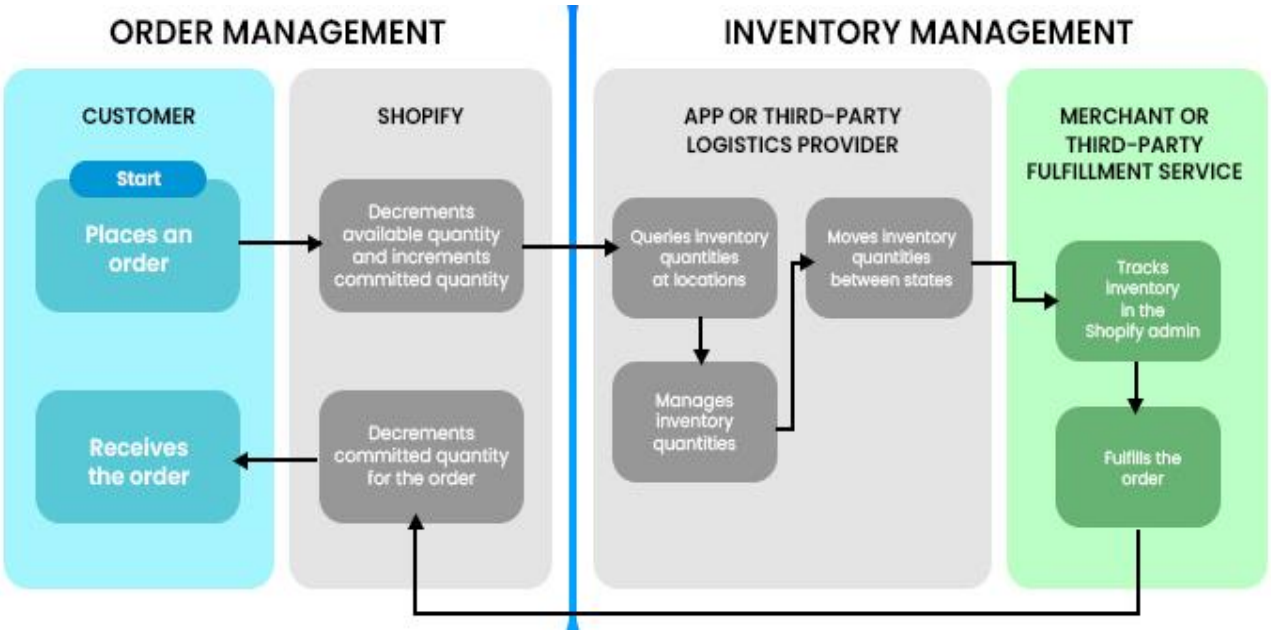
III. SYSTEM ARCHITECTURE

The Android-based inventory management system mainly consists of the following components:



3.1 Android Application

The mobile application provides a user-friendly interface for managing inventory operations such as [3][4]

- Adding products
- Updating stock
- Viewing reports
- Barcode scanning

3.2 Database

The database stores inventory information such as:

- Product details
- Quantity
- Supplier information
- Sales and purchase records
- Common databases used are:
- SQLite
- MySQL
- Firebase

3.3 Server or Cloud Storage

Cloud storage allows data synchronization between multiple devices and provides backup facilities.

IV. TECHNOLOGIES USED [2][3]

Technology	Purpose
Android Studio	Application development
Java/Kotlin	Programming language
SQLite/Firebase	Database management
Barcode Scanner	Product identification
Cloud Computing	Data storage and synchronization

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V. FEATURES OF ANDROID-BASED INVENTORY MANAGEMENT SYSTEMS

- The important features include:
- User login and authentication
- Product entry and update
- Barcode and QR code scanning
- Stock monitoring
- Real-time notifications
- Report generation
- Data backup and recovery
- Search and filter options

VI. ADVANTAGES

a. **Easy Accessibility**
Users can access inventory information through mobile devices from any location.
b. **Improved Accuracy**
The system reduces manual errors in inventory calculations and stock records.
c. **Cost Effective**
Android devices are affordable compared to traditional inventory systems.
d. **Real-Time Updates**
Stock details are updated immediately, improving decision-making.
e. **Faster Operations:**
Barcode scanning speeds up inventory tracking processes.

VII. LIMITATIONS

- Some limitations of the system are:
- Dependence on internet connectivity
- Security risks in online databases
- Mobile battery limitations
- Need for regular software maintenance

VIII. APPLICATIONS

- **Retail Business**
  Used for stock tracking and sales management.
- **Agriculture**
  Helps manage seeds, fertilizers, pesticides, and storage inventory.
- **Healthcare**
  Used for medicine stock management in hospitals and pharmacies.
- **Warehouses**
  Supports inventory monitoring and product movement tracking.
- **Educational Institutions**
  Manages laboratory equipment and library inventory.

IX. FUTURE SCOPE

Future improvements in Android-based inventory systems may include:

- Artificial Intelligence for demand prediction
- IoT-based smart inventory monitoring
- Blockchain security systems
- Voice-controlled inventory management
- Advanced cloud analytics

These technologies can improve automation and efficiency.

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X. CONCLUSION

Android-based inventory management systems provide a modern and efficient solution for managing inventory operations. These systems help organizations reduce manual work, improve accuracy, and provide real-time monitoring through mobile applications. Due to their flexibility, affordability, and ease of use, Android-based inventory systems are becoming increasingly popular in different sectors. Future integration with AI, IoT, and cloud technologies will further enhance their capabilities.

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