



# Generic Inventory Software for Online and Offline Business

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**Abstract:** Competition is rapidly growing in businesses requiring entrepreneurs to create product excellence and to study the behaviour of consumers. One of the advantages that can be done by entrepreneurs is utilizing technologies under development. Technological developments enable employers in small, medium, and large companies to do business by using the Internet. Now the development of the Internet can be integrated with mobile devices such as mobile phones to make the flow of information more widely. Sole Traders and small-scale businesses running on WhatsApp, Instagram do not have a simple platform to run their businesses. These businesses need to spend a lot in setting up their inventory, accounting systems or make manual bookkeeping via excel or paper notebooks. Generic Inventory Software for online and offline business is a mobile-based application that serves as a one-stop-shop for sole traders, freelancers, sellers trading via Instagram, WhatsApp, etc., and small-scale businesses. The application of mobile-based inventory is to make users inventory, with a menu that is available in the form of product items. This application can make traders organize, process, and monitor the movement of inventory items more easily. It will also help improve performance and accommodate transaction inventory items in stores. Hence, it can provide optimal results in speed, precision, and accuracy in performing daily business.[1]

**Keyword:** Mobile-based application, inventory, small-scale business, products, QR code, transaction.

## I. INTRODUCTION

An inventory management system refers to the combination of software and hardware tools where a business person may keep the records of purchases & sales. It provides a central database that generates various reports and alarms for future demand according to the company's requirements. The quantity to which inventory must fall so on the signal that an order must be placed to replenish an item. Inventory problems of too great or too small quantities readily available can cause business failures. If a business experiences stock-out of a critical item, production halts could result.

The traditional system is extremely puzzling moreover as time-consuming for the vendors and so the clients. It is difficult for keeping records, finding out any transaction, creating bills, and generate invoices efficiently in a manual system. The owner doesn't get any information properly without presenting within the business centre physically. So, a new application is needed to solve these difficulties. Since we need something at the backend of the business to manage the products, we came up with inventory management software. This inspires us to develop a reliable android application for online and offline businesses.[8]

This Generic inventory management will be widely used for maintaining all the operations like purchasing, restocking, sales, and checking the product levels before ordering more products. He can gather any information from any place at any time about his business having just a device like a smartphone, tab, notebook, laptop, desktop, and so on. Inventory management indicates the vast framework of managing inventory. The inventory management technique is more useful in determining the optimum level of inventory and finding answers to problems of safety business and lead time.

The implementation of this system can contribute a lot to simplifying the activities among the traders, and it can also improve efficiency and productivity since there will be no need to use separate accounting software. If the system is updated in real-time, it'll generate various reports automatically. This will save important time for employees and customers.[3]

## II. LITERATURE SURVEY

The purpose of the literature survey is to identify various studies, models, and research papers in our proposed research area in an attempt to appreciate, make use of as well as bridge a missing gap, if any, between different research. Many researchers have worked and researched on various inventory management systems and most of them are based on web



solutions but there is not much research for an inventory system based on a mobile application focussing mainly on the needs of sole and small scale traders.

In the work proposed by Tejal Tandel, Sayali Wagal, and Nisha Singh, since a lot of day-to-day shopping in India is done through local retail stores in an offline manner, there is a need for a low cost, effective and accessible inventory management solution which is a mobile application that provides all the features of a point-of-sale system, effectively manage the inventory of the store and provide future sales insight. The application would have various functionalities to implement the above features such as add/update/delete category of products, Add/Update/Delete Products in every category, Display the existing inventory, Barcode scanning for incoming products and invoices via a phone camera, Sales record and prediction using Regression Analysis. [9]

Febriyanti Darnis have proposed a mobile application of an inventory system to be developed using the waterfall model to facilitate the employees in organizing, processing, and monitoring the movement of inventory items of a store. The proposed mobile app would have the following modules to help the businesses in managing their inventory effectively: Login module to sign-in and authenticate users, Goods module to view/add/update/delete goods from the inventory, Category module to View/add/update/delete the category of goods, Promo module to view/create various promotions on goods, Customer module to view customers, Driver module to view driver and customer of a particular order and Report module to view reports. [1]

In the existing system, a mobile application is used mainly having 3 core modules: Product module to create and update new products, Category module to create and update new categories, and Report module to generate reports about the inventory. Although the core modules work fine together, there has not yet been any significant advancement or improvement in the mobile-based inventory management application.

Existing applications don't help the owner of the store/business in all the steps of sales from inventory to the sale of the product. Absence of generating a unique QR/Barcode for every product. No payment module to take orders from the customers and to store payment details (payment method used, date and time of payment, etc.). No scope for generating P/L reports of the business. No proper differentiation between the privileges of owner/admin and salesperson/clerk.

### III. PROPOSED SYSTEM

Sole Traders and small-scale businesses running on WhatsApp, Instagram do not have a simple platform to run their businesses. Apps on the market today cater to medium to large-scale businesses which may not be affordable to the sole and small scale traders.

These businesses need to spend a lot in setting up their inventory, accounting systems or make do with manual bookkeeping via excel or paper notebooks, manual tracking of customer orders through chat history/screenshots, and/or hiring different people to do the above-mentioned things increasing the overhead cost, sometimes making the business unsustainable in the long run.

The existing approach is disadvantageous as it follows a traditional approach as mentioned in the drawbacks of existing systems. Therefore, an advanced and automated system is required which overcomes the drawback of the existing approach. Thus, the implementation of the new proposed system i.e application-based system will reduce the time and effort required by users. In our proposed system we are going to discuss the system architecture and the flow of our system. .

### IV. IMPLEMENTATION

The objective of our project is to develop an inventory system that can help traders organize, process, and monitor the movement of inventory items easily. Following are some of the objectives of a mobile inventory system: -

1. To develop a low/no-cost solution for sole traders and small-scale businesses.
2. To reduce their overhead costs.
3. Must be able to track live inventory seamlessly and on the go.
4. To keep a record of orders received and fulfilled.
5. To generate P/L, Sales, and other types of reports required for sustaining and expanding the business.

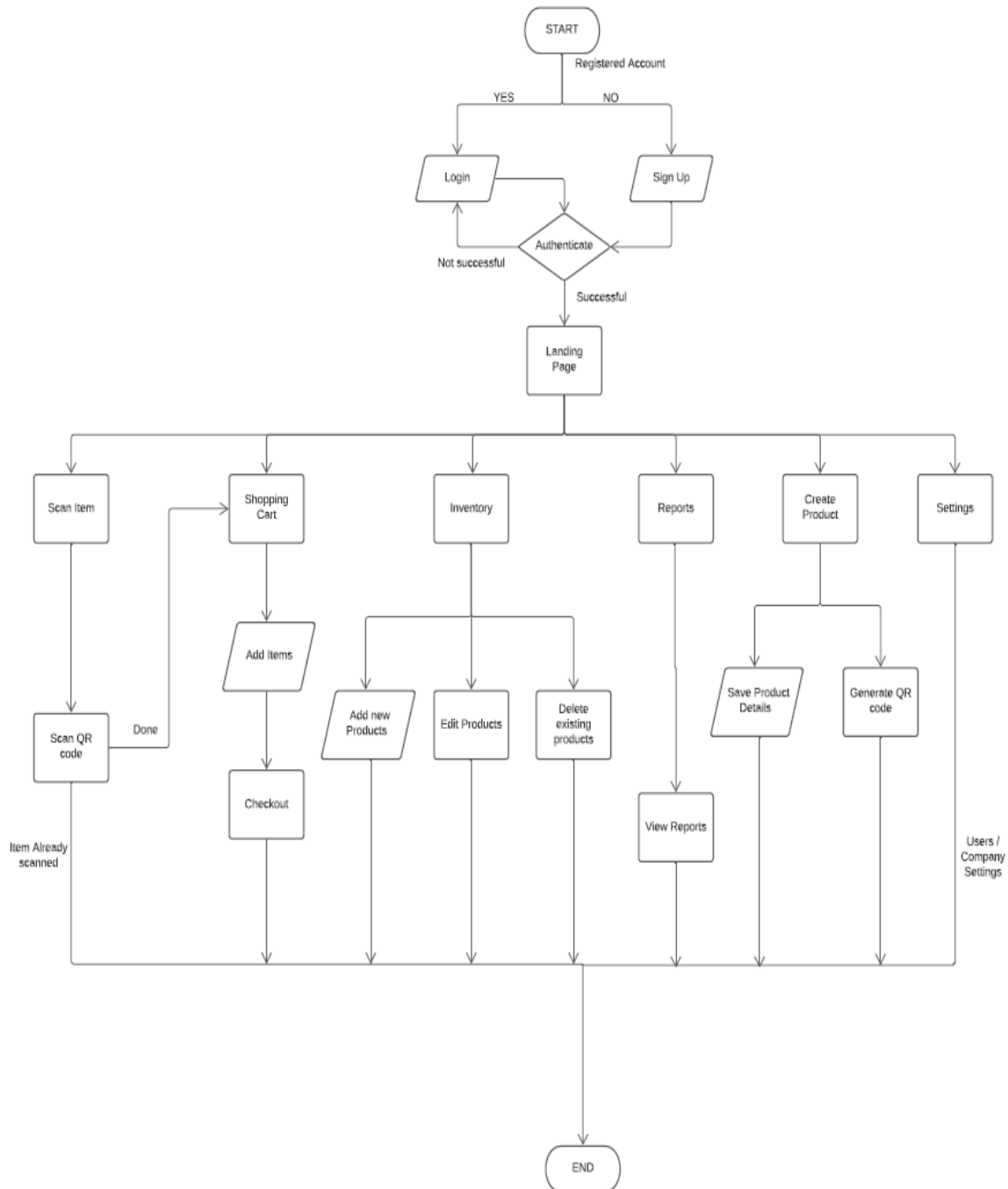


Fig 1. Flowchart

The local scope of our project will be confined to a fictional store having a small inventory and customer base and few customer transactions. The tasks that can be accomplished under local scope are:

1. Register the admin and other users.
2. Creating different products under different categories.
3. Generating unique QR/Barcode for different products.
4. Scan those QR/Barcodes of the products and add them to the shopping cart.
5. Checking out the products and saving the payment details.
6. Generating various reports (P/L, Sales, etc.) for the business.

The global scope of our project will deal with larger businesses having enormous amounts of inventory and customers as well as huge numbers of transactions. The tasks to be accomplished under global scope are:



1. Register the admin and other users.
2. Creating different products under different categories.
3. Generating unique QR/Barcode for different products.
4. Scan those QR/Barcodes of the products and add them to the shopping cart.
5. Checking out the products and saving the payment details.
6. Generating various reports (P/L, Sales, etc.) for the business.
7. The database should be able to handle large amounts of data.
8. The authentication system should be able to authenticate huge numbers of users.

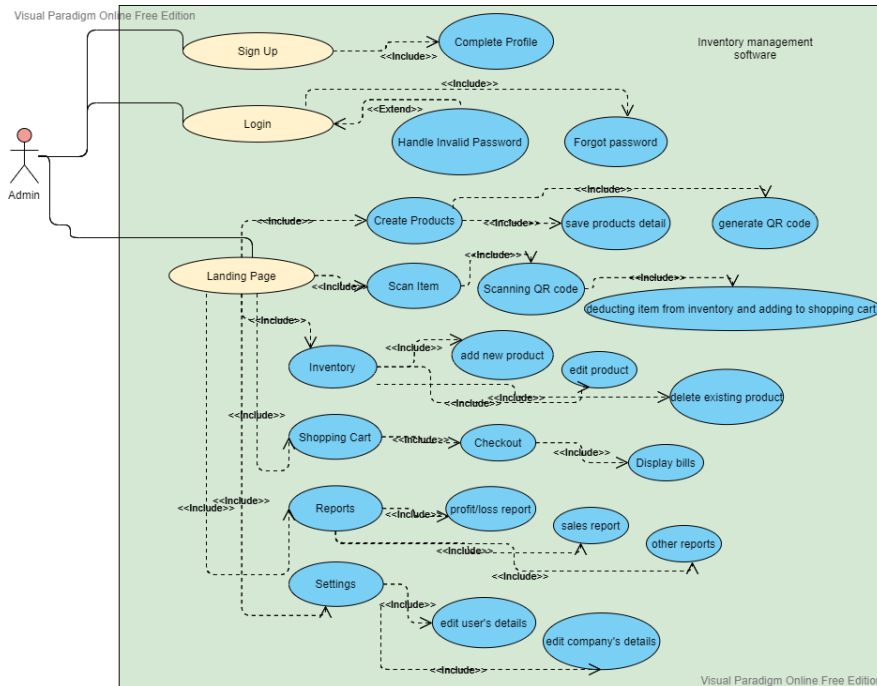


Fig 2. Use Case Diagram for Generic Inventory Software (Admin)

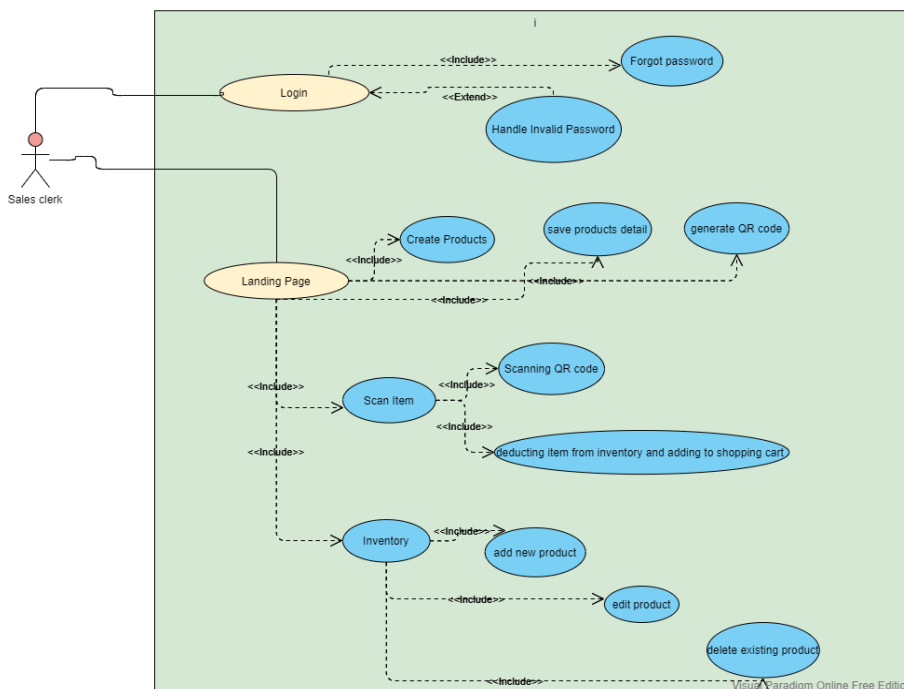


Fig 3. Use Case Diagram for Generic Inventory Software (Sales Clerk)

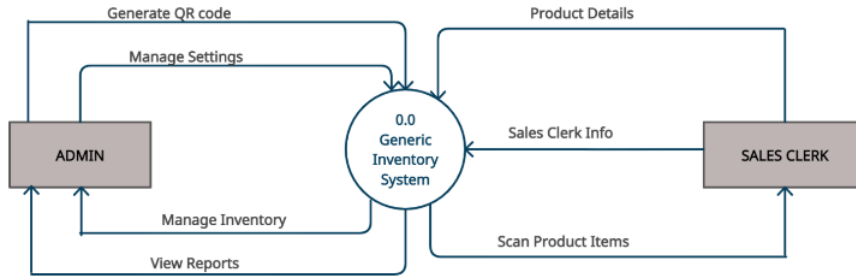


Fig 4. Level 0 DFD for Generic Inventory Software

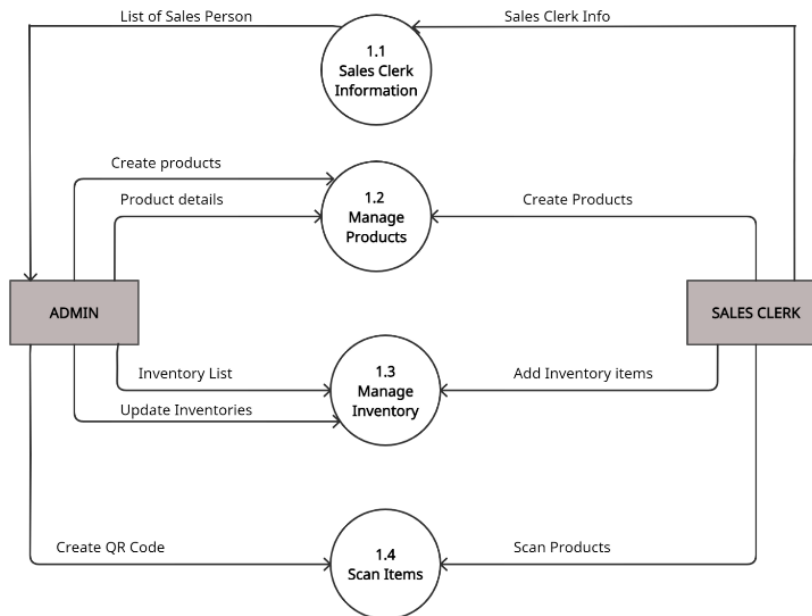


Fig 5. Level 1 DFD for Generic Inventory Software

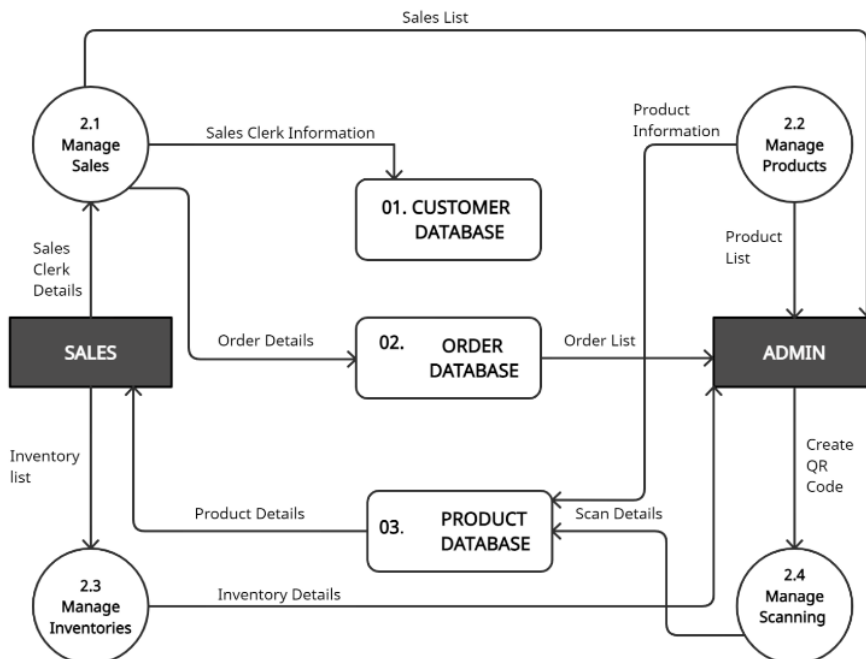


Fig 6. Level 2 DFD for Generic Inventory Software

The two primary users for this application are Admin and Sales.

Admin will have the right to perform any operation and view reports which will be produced. The user will need to create his profile by giving credentials and once registered then they can simply sign in whenever they want to use the application. From the results of the analysis and design of the application, there is a dashboard menu to select the desired page. Scan QR codes, shopping carts, inventory, reports, and creating products are the main features of this application. For the goods and promotions, the admin can add, delete, and update the data of products and the scan feature. The customer is only permitted to create products by adding details or generating QR codes; adding, editing, or deleting the inventories; and scanning QR codes. The customer will be able to see the product list that has been added by the admin. Hence, the customer can determine the limits of the initial price, product items, and price. After the purchase, online payment will be done and an invoice will be generated in the form of a pdf.

We have used Agile Scrum Methodology to carry out our project. The Agile Scrum method is a sprint-based project management system that aims to provide the highest value to stakeholders.

- Scrum is a framework that enables more effective collaboration between teams working on complex projects.
- Agile and Scrum are two similar project management systems, but with some important differences. Agile encourages more flexible and leadership teams, while Scrum encourages more rigorous and trans-departmental teams.
- The Agile Scrum method is a project management system based on step-by-step development.
- Each iteration consists of 2 – 4 weeks sprints, and the goal of each sprint is to build the most important features first and release a ready-to-ship product.
- Additional features will be incorporated into the product in subsequent sprints and coordinated between sprints based on stakeholder and customer feedback. [4][10]

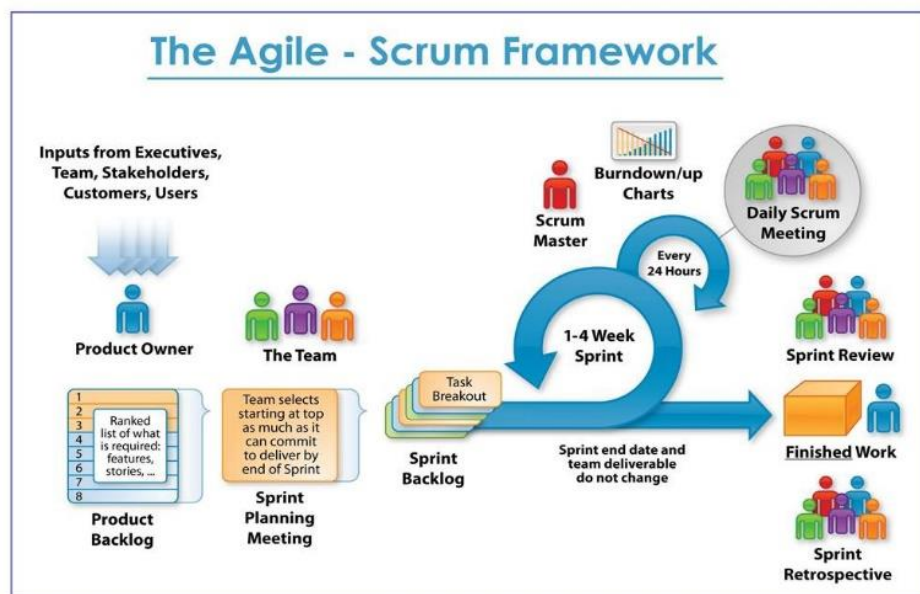


Fig 7. Agile Scrum Framework

#### IV. CONCLUSIONS

Inventory management is associated with accurate records of finished goods and ready-to-ship products. This often means that the production of the newly finished product is posted to the total inventory and the final shipment of the finished product to the buyer is deducted. By keeping an accurate inventory of your finished product, your clerk can quickly see what is available and ready to ship. The ROI of inventory management comes in the form of increased sales and profits, a positive atmosphere for employees, and an overall improvement in customer satisfaction.

A highly reliable warehouse management system. This system alleviates problems related to inventory levels. Increase productivity, increase sales, and increase profitability. Invalid dates are not allowed by the system. The next step in the project is to apply the results of the forecast, safety stock, and performance testing strategies to achieve more accurate results.



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