



## POS Case Study

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A large, faded version of the Dogra Technologies logo is centered on the page, serving as a watermark. It consists of the same geometric symbol and text as the logo in the top left corner, but is much larger and lighter in color.

POS



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# Overview

A brief summation of WEST ZONE GROUP, incorporated in the 2005 and over a span of 18+ years and going, the group has progressed formidably to become one of the top-rated corporate houses in Dubai U.A.E. The success tales of its Hypermarkets, Supermarkets and shopping malls vouches for this fact. Today, the group operates 130+ supermarkets, 4 community shopping centres, restaurants, hotel apartments, and residential towers.

## Key Feature

### User Interface

- Point of Sale is a component of the Logistics Module. A point-of-sale (POS) transaction is what takes place between a merchant and a customer when a product or service is purchased, commonly using a point-of-Sales (POS) system to complete the transaction. Below modules were implemented

Sr. No.	Module ID	Module
1	FI	Financial Accounting
2	IRS-SD	Retail-Sales & Distribution
3	IRS-MM	Retail -Materials Management
4	POS	Retail-POS & Interface

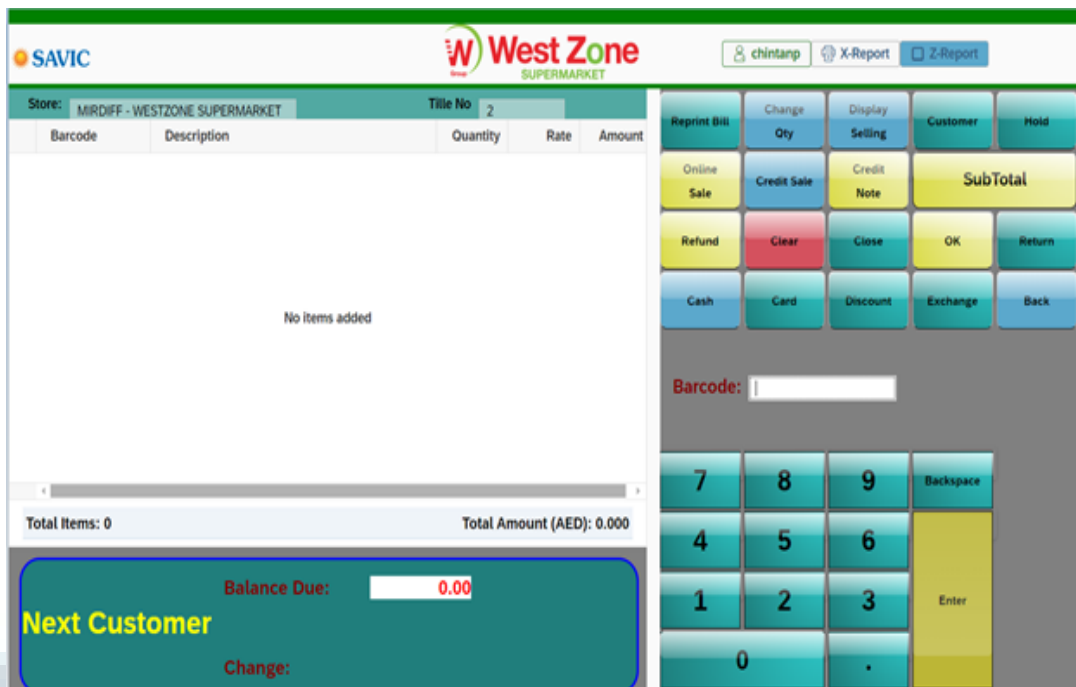
The diagram below provides a basic, rough idea of the system architecture. Please note that this is not the final UI/UX design but rather an illustration to explain the key components and their interactions as outlined in the system.

The system requires a single sign-in process using the Windows login credentials. Users who log in to the system will have full access to the application without needing a separate login within the application itself.

After opening the application, the operator will see the main checkout page. The features accessible from this window include:

Product Listing: Once a product is scanned, it is listed with details such as product description, unit, size, quantity, and pricing.





## POS Status

**Real-Time Sales Updates:** Displays live updates on sales transactions, revenue, and items sold during operational hours. Differentiates transactions by payment method (cash, credit/debit card).

**Inventory Level Tracking:** Monitors stock levels for items to prevent overselling. Highlights low-stock or out-of-stock items for immediate restocking action.

**Transaction Summary:** Consolidates total sales, discounts, refunds, and tax collections for any given period. Displays completed and pending transactions to ensure process completion.

**User Activity Logs:** Tracks user-specific actions, such as logins, transactions handled, and system modifications. Identifies discrepancies or unauthorized activities for security purposes.

**EOD Process Status:** Displays whether the End-of-Day process has been executed successfully. Provides logs of data movement from transaction tables to historical data tables.



# Dashboard

**Inventory Overview:** Current inventory status with visual indicators for low-stock or high-demand items. Drill-down views by item categories, brands, or departments.

**Employee Productivity:** Tracks cashier-wise sales and transaction counts. Identifies top-performing staff based on metrics like sales volume and transaction efficiency.

**Customer Insights:** Highlights frequent customers and loyalty program engagement. Tracks customer demographics and purchasing patterns.

**Refund and Return Management:** Overview of refund or return transactions with reasons and financial impact. Displays trends in refunds for better stock and customer satisfaction management.

**Tax and Compliance Reporting:** Summarizes total tax collected, broken down by tax type (e.g., VAT, GST). Generates tax compliance reports for submission to authorities.

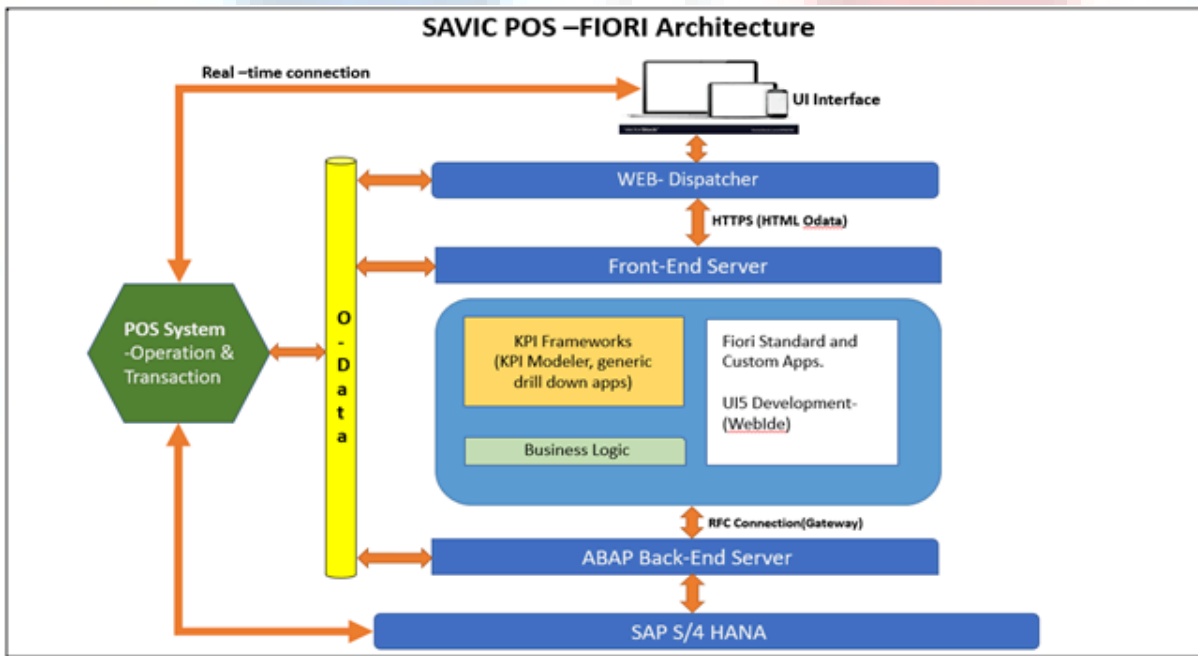
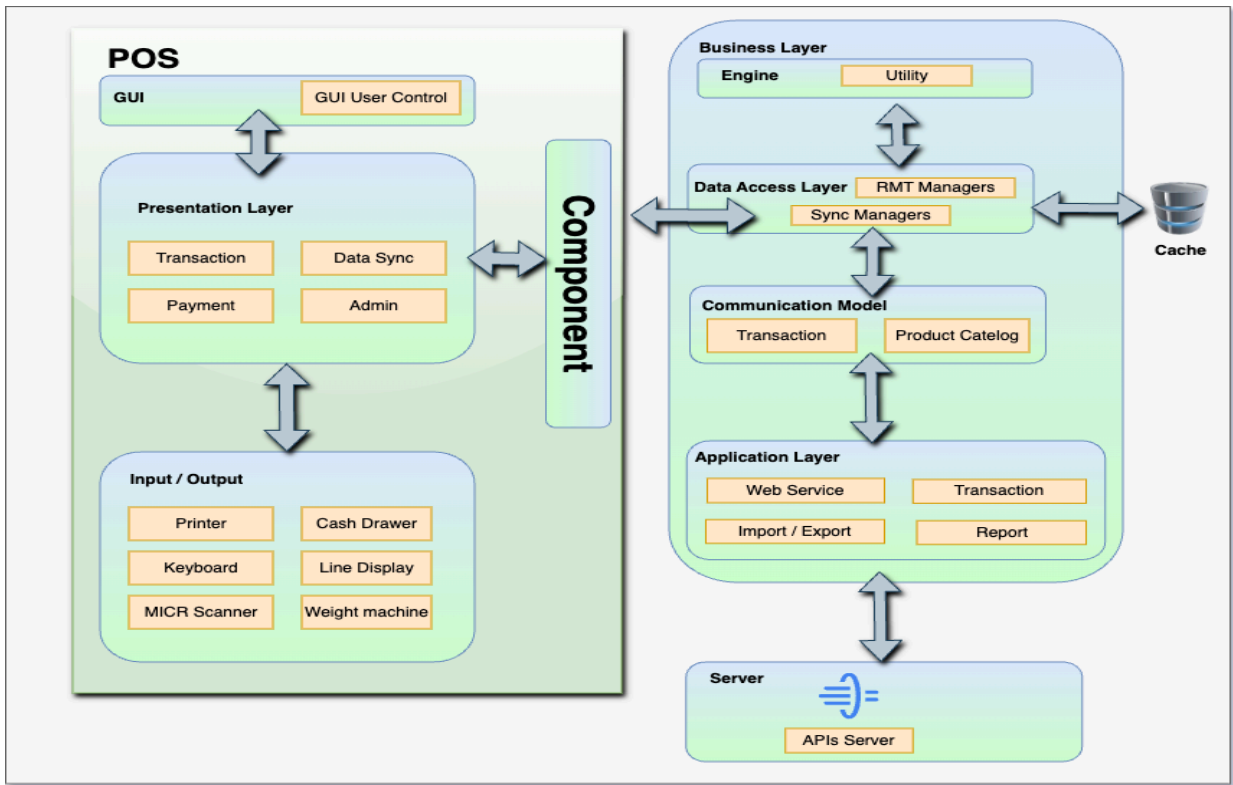
**Promotions and Discounts:** Provides real-time data on discount usage and revenue adjustments.

## POS Functionality

### Architecture (Standard)

- The point of sale (POS) system is the place where the retail transaction is completed. At the point of sale, the cashier calculates the amount owed by the customer, indicating that amount for the customer to make payment.
- Customers can make a payment by cash or various cards (e.g., Master, Visa, etc...) using terminals. For integration with payment terminals, bank gateway teams need to support as needed.
- After receiving payment, the cashier may issue a receipt for the transaction, which is usually printed. To calculate the amount owed by a customer, the cashier may use barcode scanners. POS slips need to include Logo, item description, quantity, price and tax amount as mandatory.





## Gift Voucher

- The system needs to create a gift voucher or gift card with QR code by putting voucher or card number, issue date, expiration date, card type such as voucher type in system when customer comes to buy. After that the user can choose a voucher amount 100/200/300 etc. and then issue the voucher to the customer.
- Customers must spend this voucher amount at a store a day before expiry date. Customers can spend voucher amounts in all counters of a store and the system must know the amount balance at another counter. (e.g. The customer has a voucher amount 500 AED and buys at the kid's counter by voucher payment type and spends 30 AED then goes to the counter and can spend the rest amount 20 AED).

## Promotions

Promotions refer to the entire set of activities, which communicate the product, brand or service to the user. There are several types of promotions.

System can provide the following promotion type:

Sr.no	Promotion Types
1.	Buy 1 Get 10%, Buy more than 2 Get 25%.
2.	Buy 1 Get 10%, Buy 2 Get 25%.
3.	Buy 1 Get 1 (Same article)
4.	Buy 1 Get 1 (Different article)
5.	Article Amount Discount value/%
6.	Article Price Discount
7.	Fixed Price (A+B)-2 different articles

## Sales Return Process

Merchandise that was returned to the seller by the customer. The company has limitations and procedures in place for receiving return goods.



Limitation : The return process must be within 5 days from selling date.  
: Non cashable in ideal scenario  
: There may be cash return with approval by respective store manager

Procedures : When customers return goods, they must show the original slip.  
: Cashier retrieves the original slip then selects the item and quantity which customer wants to return. The system will generate a return slip on that date.  
: The cashier needs to open a new slip for changeable goods.

## Taxation

- A VAT is tax paid to a governing body for the sales of certain goods and services. There are two types of goods, which are taxable and non-taxable.
- The system will calculate VAT 5% upon goods (Item-wise taxation) and after discounted amount. VAT calculation method is included. The inclusive method is used for taxation. VAT amount will show on slip.

## Reporting

- Sales Reports
  - Sales Summary
  - Shift Handover Report- (for format refer current Z report)
- Analysis Reports
- Gross Profit Report
- Sales Control Report
  - Sales Return
  - Discount Sales

## Buttons Functionality

### 1] Change Quantity

- Press Change quantity before scanning or entering barcode number.







- Enter barcode number and press enter. It will show selected quantities in the table.



## 2] Display Selling

- It will show the detailed product when the barcode is entered.



## 3] Reprint Online Bill

- For Reprinting Bill for invoice.



#### 4] Clear

- It will clear the content of the text box for Barcode/amount received/CC number/Customer account/ (and other text box).

#### 5] Close

- It will close the POS and will go on the Fiori launchpad main screen. (Only when it is in the initial screen). If it is pressed during the process, it will show the validation - (Cannot Close during transaction).

#### 6] SALES REFUND

- Enter the Barcode
- Press on Refund



- Validation will pop up to enter the password.
- Enter Password given to store manager and enter.





- Press 2nd time on enter it will print a bill and will checkout for the next customer.

#### 7] Subtotal

- Using for showing Balance due and Change in the System.

#### 8] Calculator

- For Calculation



#### 9] Sales button functionality for payment and Scenarios

- Add Barcode number manually or through Barcode Gun press enter.



- Press Subtotal and it will display the total bill amount.



- Enter the amount received, press on enter it will show Balance Due and Change.



- Press 2<sup>nd</sup> time on enter it will print a bill and will checkout for the next customer.





- Process completed for cash payment

### 10] Customer Side Screen

- The screen is visible to the Customer without any input.

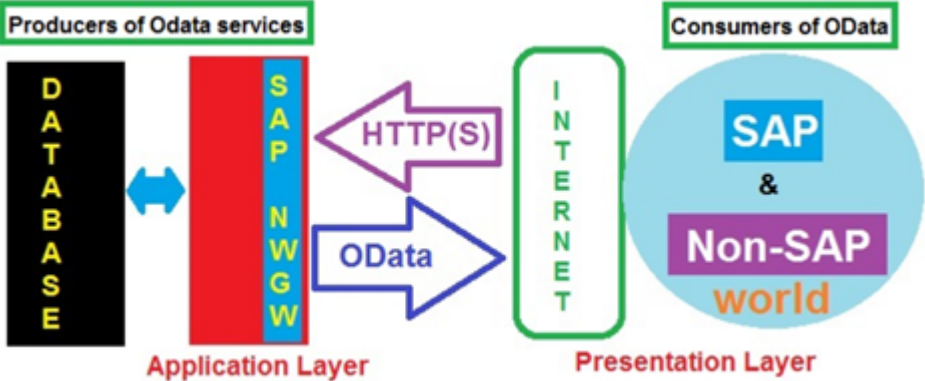


## O Data Binding

OData (Open Data Protocol) is a protocol for building and consuming RESTful APIs that provide access to data resources. OData uses a standardized URI syntax and supports a

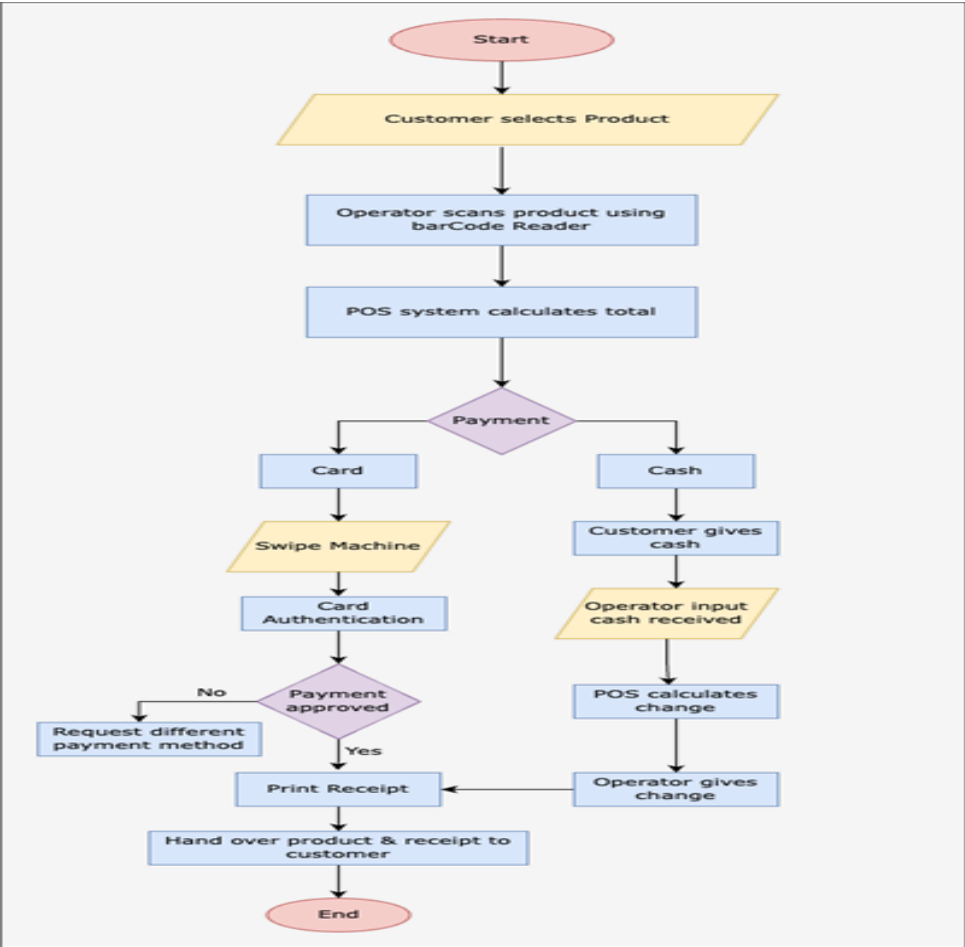


rich query language, enabling developers to easily retrieve and manipulate data from various data sources such as databases, file systems, and cloud services.



## Data Flow

The flow diagram visually represents the checkout process of POS.



# Client Profile

The client has over 18 years of experience in the IT industry, serving as an architect and project manager in reputed organizations. He has a strong track record in building teams and software products from scratch, managing software delivery, pre-sales, system analysis, application security, and DevOps. He possesses a strong background in software processes and agile practices and is certified in various areas such as ITIL, Prince2, and TOGAF. He is passionate about this product, which is part of a suite of products in this domain, and brings to it more than 10 years of experience.

## Challenges

**Integration Complexity:** Incorporating barcode scanners, payment terminals, receipt printers, and cash drawers into the POS system requires overcoming compatibility and communication challenges.

**Software Interoperability:** Synchronizing POS software with backend systems like financial accounting, inventory management, and retail distribution modules demands careful mapping and testing.

**Data Security:** Access Control Implementing robust authentication and role-based permissions to safeguard sensitive POS functions. Compliance with Privacy Regulations Ensuring adherence to VAT rules and consumer protection laws, especially concerning customer information and transaction logs.

**Fraud Prevention:** Transaction Verifying returned goods against original sales slips to prevent unauthorized refunds.

## Data Security

### Payment Data Protection:

- Encrypting payment card details to comply with PCI DSS standards.
- Implementing tokenization for secure card transactions.

### Customer Information Security:

- Protecting sensitive data like customer accounts and gift card balances from unauthorized access.

### Vulnerability Management:



- Regularly updating and patching the system to protect against malware and cyberattacks.
- Using firewalls and intrusion detection systems for added security.

### **Data Backup and Recovery:**

- Implementing regular data backups to secure transaction history and prevent data loss.
- Ensuring disaster recovery plans are in place for business continuity.

## Benefits

**Efficiency and Speed:** Streamlines transaction processes, reducing checkout times and improving customer experience.

**Real-Time Data Insights:** Provides instant visibility into sales, inventory, and customer behavior for better decision-making.

**Enhanced Accuracy:** Reduces human error in calculations, billing, and inventory updates through automation.

**Customizable Promotions and Discounts:** Supports flexible promotional schemes like "Buy 1 Get 1" and discount offers, boosting sales.

**Improved Customer Experience:** Allows seamless payment options (cash, card, and mixed payments) and issue of detailed receipts.

**Centralized Management:** Simplifies operations with centralized control over multi-store environments.

**Compliance Support:** Automatically calculates and displays applicable taxes, ensuring adherence to VAT or GST regulations.

## Technology Used

.NET C# - Windows Forms Application.

MySQL, Gitlab, CI/CD pipeline and Jenkins for maintaining the build.

