"ERP System with Power BI analytics to measure the performance of Abu Zahra Electronic Co."

Graduation project report submitted to the Department of Management Information Systems
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Abstract

يهدف هذا المشروع إلى تحسين إدارة المبيعات والمخزون في شركة أبو زهرة للإلكترونيات من خلال تطوير حل متكامل يعتمد على نظم تخطيط الموارد المؤسسية وأدوات ذكاء الأعمال لدعم عملية اتخاذ القرار. تعاني الشركة من تحديات تشغيلية ناتجة عن تعدد فروعها واعتماد كل فرع على مخزون منفصل، مما يحدّ من القدرة على معرفة توافر المنتجات بشكل لحظي ودقيق، ويؤثر سلبًا على كفاءة خدمة العملاء وإدارة المخزون. إضافة إلى ذلك، تفتقر الإدارة إلى رؤية تحليلية شاملة حول أداء المبيعات وحركة المخزون بين الفروع.

لإدارة العمليات الأساسية مثل Odoo باستخدام منصة (ERP) تم في هذا المشروع بناء نظام تخطيط موارد مؤسسية بهدف تقليل n8n المبيعات والمخزون. كما جرى أتمتة عدد من العمليات التشغيلية وتكامل البيانات باستخدام أداة التدخل اليدوي وضمان تدفق البيانات بشكل منتظم ودقيق. بعد ذلك، تم استخراج البيانات وتنظيفها وتحويلها، وبناء مناسبة لدعم التحليل واتخاذ القرار. وفي المرحلة النهائية، تم تصميم لوحات تحكم (Data Modeling) نماذج بيانات تحليلية تفاعلية توفّر مؤشرات أداء رئيسية تُمكّن الإدارة من متابعة أداء الفروع، تحليل المبيعات، تحديد المنتجات الأكثر مبيعًا، ومراقبة مستويات المخزون بشكل مركزي.

مع الأتمتة وأدوات ذكاء الأعمال يساهم في تحسين الرؤية التحليلية، رفع ERP أظهرت نتائج المشروع أن دمج أنظمة كفاءة العمليات التشغيلية، ودعم القرارات المبنية على البيانات، مما يعزز الأداء الإداري والتشغيلي في الشركات الفلسطينية متعددة الفروع.

This project aims to improve sales and inventory management at Abu Zahra Electronics by developing an integrated solution based on Enterprise Resource Planning (ERP) systems and business intelligence tools to support decision-making. The company faces operational challenges due to its multiple branches and each branch's reliance on separate inventory, which limits the ability to accurately and real-time product availability and negatively impacts customer service efficiency and inventory management. Furthermore, management lacks a comprehensive analytical view of sales performance and inventory movement between branches.

In this project, an Enterprise Resource Planning (ERP) system was built using the Odoo platform to manage core processes such as sales and inventory. Several operational processes were automated, and data was integrated using the n8n tool to minimize manual intervention and ensure a smooth and accurate data flow. Subsequently, data was extracted, cleaned, and transformed, and appropriate data modeling was developed to support analysis and decision-making. In the final phase, interactive analytical dashboards were designed, providing key performance indicators (KPIs) that enable management to monitor branch performance, analyze sales, identify best-selling products, and centrally monitor inventory levels.

The project results showed that integrating ERP systems with automation and business intelligence tools contributes to improving analytical visibility, raising the efficiency of operational processes, and supporting data-driven decisions, thereby enhancing administrative and operational performance in Palestinian multi-branch companies.

Acknowledgments

For Our Palestine …

For Our University …

For Our Teachers …

For Our Family …

We Present This Project …

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Introduction

1.1 Background

In light of the rapid development of the global economy, information technology and information systems have become essential elements in improving organizational efficiency and enhancing competitiveness and sustainability. Data is no longer merely an operational output, but has transformed into a strategic resource relied upon to support decision-making and improve administrative and operational performance. Modern organizations increasingly depend on integrated digital systems to collect, analyze, and transform data into valuable insights that help management understand the organizational landscape and predict future trends. In the Palestinian context, many companies face challenges related to the weak investment in and effective utilization of operational data, particularly in areas such as sales and inventory management and coordination between

different branches. This highlights the importance of enterprise resource planning (ERP) systems and business intelligence (BI) tools in supporting data-driven decisions.

Among these companies is Abu Zahra Electronics, a Palestinian retail group specializing in the sale and maintenance of electronic devices. It operates in the local market through four branches located in Nablus and Ramallah. The company has three branches in Nablus: the Asira Street branch, the Rahal Abu Zahra branch, and the An-Najah National University branch, in addition to a branch in Ramallah. The company offers a diverse range of electronic products, including mobile phones, home appliances, and kitchenware, with cash and installment payment options, along with maintenance and delivery services. As the company has expanded, diversified its branches, and increased its operations, the need for effective information systems has become critical. These systems are essential for organizing data, improving operational efficiency, and supporting management in monitoring performance and making informed decisions aligned with the company's operational and strategic objectives.

1.2 Problem Statement

Abu Zahra Electronics faces a major challenge in managing sales and inventory across its various branches. Each branch operates with its own independent inventory, lacking a centralized system that provides real-time and accurate visibility into product availability across all branches. This makes it difficult for employees to determine product availability when customers request a product, especially if the requested product is unavailable at the desired branch. Consequently, employees are forced to manually contact other branches to inquire about product availability, leading to delays in customer service, increased operational workload, and decreased customer satisfaction.
Furthermore, management suffers from the absence of analytical dashboards that would enable comprehensive and integrated monitoring of sales and inventory performance. Accurate analytical data is unavailable to help understand sales trends, evaluate branch performance, identify best-selling products, or analyze demand patterns and inventory turnover rates. This lack of analytical visibility limits management's ability to make data-driven strategic decisions, making planning and inventory management heavily reliant on personal judgment and past experience. Furthermore, the absence of a decision-making support system exposes the company to recurring operational problems, such as running out of required products in a timely manner or overstocking, negatively impacting operational efficiency and increasing costs. Therefore, the need arises for a solution that

provides a unified and accurate view of data, supports the decision-making process, and contributes to improved sales and inventory management across the entire company.

1.3 Objective

The primary objectives of this project are to:

1. **Developing an Integrated Enterprise Resource Planning (ERP) System for Sales and Inventory Management.**
   - build a simplified ERP system using the Odoo platform to manage sales and inventory operations across all company branches. This ensures data consistency and facilitates centralized and organized monitoring of operational processes.

2. **Enabling Employees to Real-Time Inventory Status Across All Branches.**
   - The system provides a unified view of inventory status across all branches, enabling employees to verify product availability instantly and accurately without the need for manual communication between branches.

3. **Automating Inventory Updates to Reduce Manual Errors.**
   - automate inventory data updates for every sale or modification using integration and automation tools. This reduces errors resulting from manual data entry and ensures data accuracy and continuous updating.

4. **Connecting the System to a Central Database for Sales and Inventory Data Collection.**
   - All company branches are connected to a central database through the Odoo ERP system, allowing for the unified collection of sales and inventory data. This facilitates analysis, monitoring, and decision-making processes.

5. **Using Data Analysis Tools to Extract Key Performance Indicators (KPIs).**
   - The project leverages Power BI to analyze sales and inventory data and build interactive dashboards that include KPIs such as total sales, inventory movement, best-selling products, and inventory turnover rate.

6. **Supporting Management in Data-Driven Strategic Decision-Making.**
   - The analytical dashboards aim to empower management to make accurate strategic decisions related to planning, demand forecasting, inventory optimization, and improving operational efficiency across the company.

1.4 Scope

This project involves developing a simplified Enterprise Resource Planning (ERP) system using the Odoo platform to manage sales and inventory operations across four major company branches. The system aims to unify operational data across branches, improve data accuracy, and support management in performance monitoring and data-driven decision-making.

Included:

- **Setting up and configuring the Sales & Inventory modules:** in the Odoo ERP system, enabling centralized recording of sales transactions, inventory updates, and product management across all branches.
- **Automating data integration using the n8n tool:** which connects the Odoo system to analytical data sources and performs automatic and periodic data transfer and processing, ensuring continuous data updates and minimizing human error.
- **Analyzing sales and inventory data and building appropriate data models:** to support graphical analysis and data utilization in dashboards and decision-making.
- **Design and build interactive dashboards using Power BI:** to visually and centrally display sales and inventory key performance indicators (KPIs), such as total sales, inventory movement, best-selling products, and inventory turnover rate.
- **Provide practical recommendations to management:** based on the results of the data analysis, with the aim of improving inventory management, reducing stockouts and overstocking, and increasing sales process efficiency.

Excluded:

- Integration with accounting or human resources systems.
- Manage shipping, delivery, or customer service operations.
- Develop a web interface or website for product display or online direct sales but may be explored in future iterations.

1.5 Significance of the Study

Practical Aspect

This project directly and practically contributes to improving sales and inventory management mechanisms within the company by automating operational processes

using the Odoo ERP system and linking it to the n8n platform. This integration enables automated and periodic data processing and integration without requiring manual intervention. This integration allows for the unification of sales and inventory data across different branches, reducing errors resulting from manual data entry and improving the accuracy and speed of data updates. The project also supports sales and inventory data analysis using Power BI by building interactive dashboards that provide a clear view of product movement, inventory levels, and best-selling products. This contributes to improved operational efficiency, reduced stockouts and overstocking, and enhanced customer service.

Administrative Aspect

At the administrative and organizational level, the project provides a decision-making tool by transforming operational data into understandable and usable analytical information. The analytical dashboards help management monitor branch performance, evaluate sales results, and support data-driven planning and forecasting of future demand, rather than relying on subjective assessment. The project also promotes the concept of data-driven management, contributes to organizing work, improving coordination between branches, and raising the efficiency of strategic planning, which supports the company's sustainability and ability to compete in a business environment that is increasingly moving towards digital transformation.

Literature Review

2.1 Business Intelligence Life Cycle

Business intelligence (BI) is a fundamental concept in modern information systems. It aims to transform raw operational data into valuable insights that support management decision-making and improve organizational performance. Studies indicate that BI tools play a pivotal role in analyzing historical and current data, identifying patterns and trends, and providing analytical insights that contribute to improved strategic and operational planning, particularly in sales and inventory management.

Turban et al. (2011) explained that BI represents a set of tools and techniques that enable organizations to access and analyze data effectively, thereby enhancing their ability to make data-driven decisions rather than relying on personal judgment.

2.2 Integration between ERP and BI

Despite the important roles of both ERP and BI, the literature indicates that true value is realized when ERP systems are integrated with BI tools. ERP provides operational data, while BI tools analyze this data and transform it into performance indicators and analytical reports.
Watson and Wixom (2007) demonstrated that ERP-BI integration contributes to improved management decision-making, particularly in multi-branch environments. However, many organizations in developing countries suffer from weak integration due to limited digital infrastructure or a lack of technical expertise.

2.3 ERP and BI in the Palestinian Context

In Palestine, Badwan's study (2024) indicates that weak investment in information technology and information systems, particularly in analytical fields, negatively impacts operational efficiency and supply chains. Data from the Palestinian Central Bureau of Statistics (2022) also shows that a significant percentage of organizations do not use advanced information systems to support decision-making and rely on traditional data management methods.
This deficiency is particularly evident in the integration of ERP and BI, as many companies lack analytical dashboards that provide a comprehensive view of sales and inventory, leading to inaccurate decisions and recurring operational problems.

2.4 Resarch Gap

A review of previous literature reveals that most studies have focused on ERP or BI separately, while a clear research gap exists in studies addressing the integration of ERP and BI using a structured methodology such as the Business Intelligence Life Cycle, particularly within the Palestinian context.
Therefore, this project aims to bridge this gap through a practical application of the BI Life Cycle methodology, based on a simplified ERP system (Odoo), automating data flow, and analyzing it using Power BI to support decision-making in a multi-branch Palestinian company.

System Analysis & Design

3.1 Methodology

This project relies on two main methodologies for system analysis and design, tailored to the nature of the proposed solution, which combines an operational ERP system with an analytical business intelligence system. The Systems Development Life Cycle (SDLC) methodology was used to develop and automate the enterprise resource planning (ERP) system, while the Business Intelligence Life Cycle methodology was used to design and implement the sales and inventory analytics component.

ERP System Development Methodology (SDLC)

A simplified Systems Development Life Cycle (SDLC) methodology was adopted to develop an ERP system using the Odoo platform, and its processes were automated using the n8n tool. This methodology included the following stages:

1. **Analysis Phase**: At this stage, the company's current operational processes were analyzed, particularly sales and inventory management across different branches. Key problems were identified, such as reliance on manual inventory updates and a lack of a unified view of product status, leading to errors and delays in decision-making.
2. **System Design Phase:** The system structure within Odoo was designed, defining the required core units: Sales, Inventory, and Purchasing. Key entities such as Products, Branches, Sales Operations, and Inventory Movements were also defined, along with the relationships between them.

3. **Implementation Phase :**The system was implemented by setting up sales and inventory modules in Odoo and connecting all branches to a central database. Subsequently, the n8n tool was used to automate data transfer and updates, ensuring that sales and inventory data are updated regularly without manual intervention, thus reducing human error and guaranteeing continuous data flow.

4. **Testing and Validation Phase :**The system was tested to verify the accuracy of sales transaction recording, inventory update accuracy, and data flow integrity after automation. Data consistency across different branches was also confirmed.

Business Intelligence Life Cycle Methodology

To analyze data and support decision-making, the Business Intelligence Life Cycle methodology was adopted as a structured framework for developing the analytical solution using Power BI. The stages of this methodology were implemented as follows:

1. **Analyze Business Requirements:** Management needs and analytical questions related to sales and inventory were identified, such as sales data for each branch, best-selling products, and inventory levels.

2. **Data Extraction from ERP System:** In this stage, sales and inventory data were manually extracted from the Odoo system in the form of tables (e.g., sales, product, branch, and inventory movements) to serve as a source of analytical data.

3. **Build Analytical Dataset:** Next, the data was cleaned, processed, and transformed into an analysis-ready model, ensuring the accuracy of the values and the consistency of relationships between tables.

4. **Design Data Model :**An analytical data model was designed to link the sales and inventory tables with reference tables (e.g., product, branch, and date), ensuring support for the analysis processes within Power BI.

5. **Develop BI Dashboards:** Interactive dashboards were developed using Power BI to display key performance indicators (KPIs) for sales and inventory, such as total sales, inventory movement, best-selling products, and inventory turnover rate.

6. **Administer and Maintain:** In the final stage, a mechanism was set up to update the data periodically, monitor the continuity of the dashboards' operation, and ensure their compliance with management requirements.

3.2 System Requirements

Functional Requirements:

1. Sales Management:
   - Create and manage sales orders.
   - Generate invoices automatically.
   - Store customer and sales data.
2. Inventory Management:
   - Automatically update stock levels after sales and purchases.
   - Monitor inventory levels across all branches.
   - Send reorder notifications for low-stock items.
3. Purchase Management:
   - Create minimum purchase requisitions when stock reaches levels.

- Record supplier invoices and update inventory.
- Generate and send purchase orders to suppliers.

4. Process Automation & Data Integration (n8n):
   - Automate data synchronization between sales, inventory, and purchases.
   - Schedule periodic data updates without manual intervention.
   - Ensure data consistency across ERP modules.

5. Business Intelligence & Analytics (Power BI):
   - Extract sales and inventory data from ERP.
   - Build interactive dashboards for sales and inventory.
   - Calculate and display key performance indicators (KPIs).

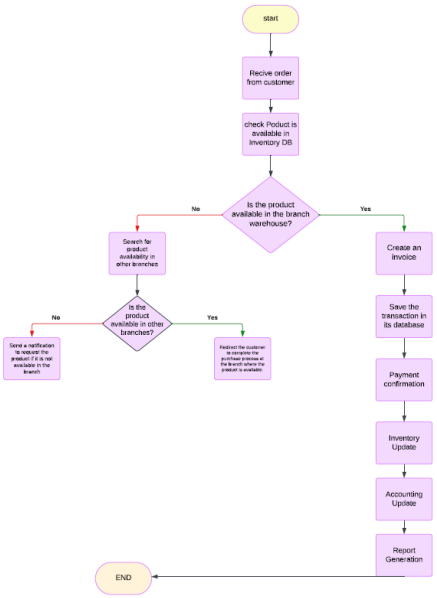
Non-Functional Requirements:

- **Usability**: Simple and user-friendly interface.
- **Security**: Role-based access control.
- **Performance**: Real-time or near real-time data updates.
- **Integration**: Unified ERP system with automation and analytics support.
- **Scalability**: Support adding new branches and Modules in the future.
- **Data Accuracy**: Consistent and reliable data across systems.

3.3 Workflows

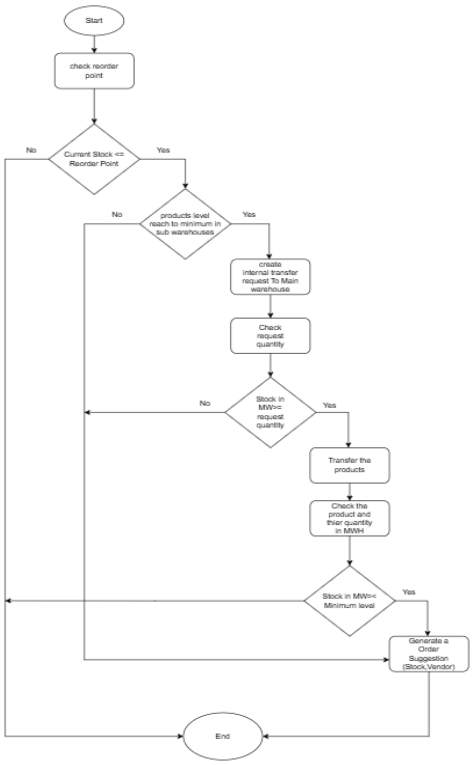
Sales Workflow

This diagram illustrates the steps involved in processing sales orders, This process aims to expedite sales and ensure accurate inventory updates and reporting.



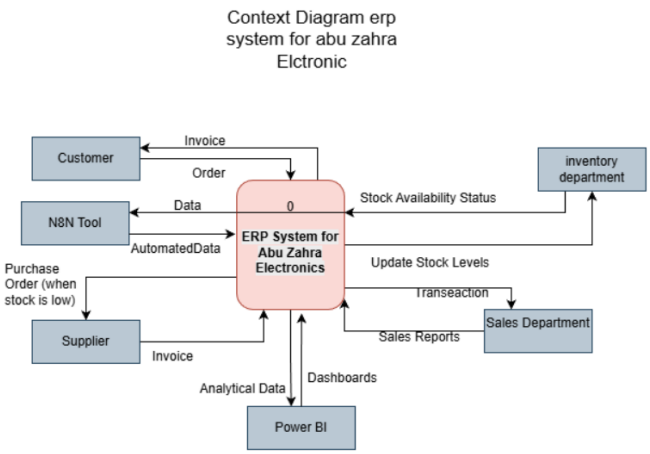
Inventory Replenishment & Purchase Workflow

This diagram illustrates the reordering process when inventory reaches the reorder point.
This process aims to ensure continuous product availability and prevent stockouts.



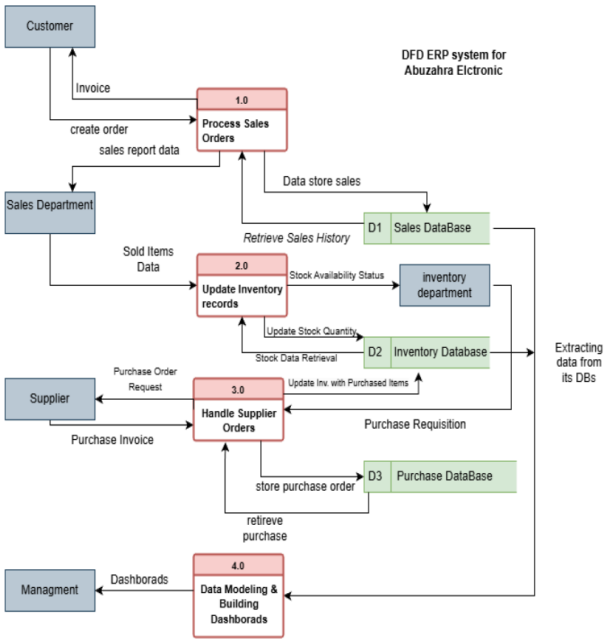
3.4 Context Diagram

The context diagram illustrates the overall interaction between Abu Zahra Electronics' ERP system and its associated external parties, such as customers, sales and inventory departments, and suppliers. It shows how orders are recorded, invoices are issued, and inventory status is updated. The diagram also demonstrates the system's integration with the n8n automation tool for automatic data updates and the flow of analytical data from the ERP system to Power BI for display in decision-supporting dashboards.



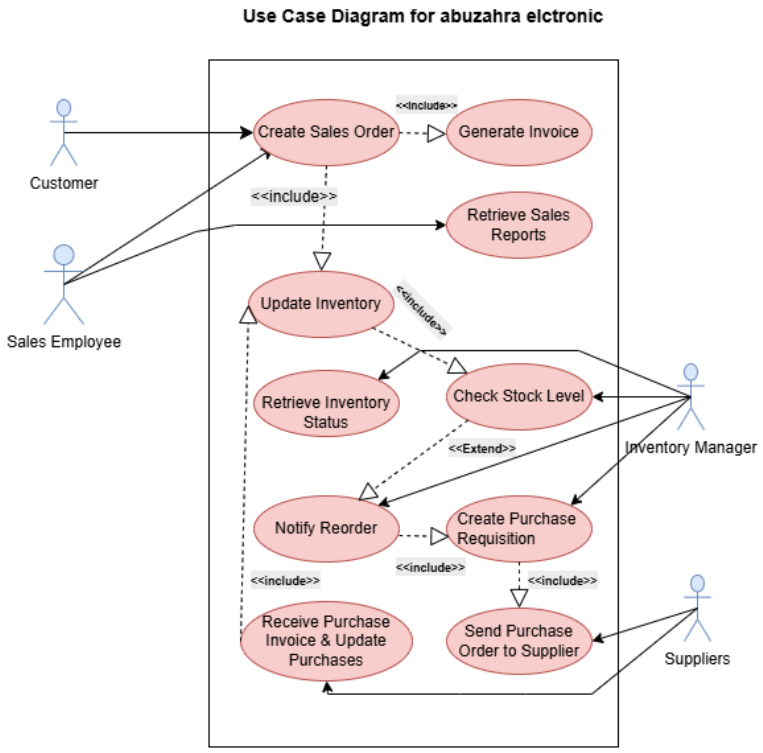
3.5 Data Flow Diagram

The Data Flow Diagram focuses on the logical flow of business data within the ERP system. Automated data synchronization and background workflows are implemented using n8n; however, they are not explicitly represented as separate processes in the diagram to maintain clarity and abstraction.



3.6 Use Case Diagram

The Use Case Diagram illustrates the functional interactions between system users and the ERP system. Automated background processes, such as data synchronization using n8n and analytical reporting using Power BI, operate behind the scenes and therefore are not explicitly represented as actors in the diagram.



3.7 Data Modeling

In this project, two Star Schema models were designed to support analysis, one for sales data and the other for inventory data, with the aim of organizing data and improving the efficiency of analysis within Power BI.

Sales Star Schema

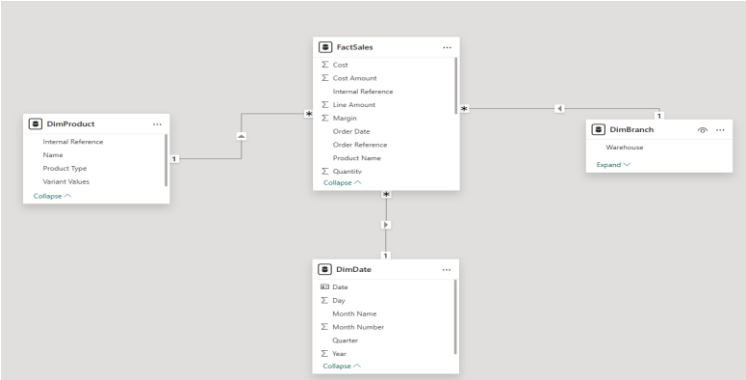
Fact Table

- **Fact Sales:** Quantity, Line Amount, Cost, Margin, Order Date

Dimension Tables

- DimProduct: Product information (Name, Type, Variant).
- DimBranch: Warehouse and Branch Information (Warehouse, Location).
- DimDate: Date and Time Information (Day, Month, Quarter, Year).

Relationships: FactTable (*) → (1) each Dimension Tables.



Inventory Star Schema

Fact Table

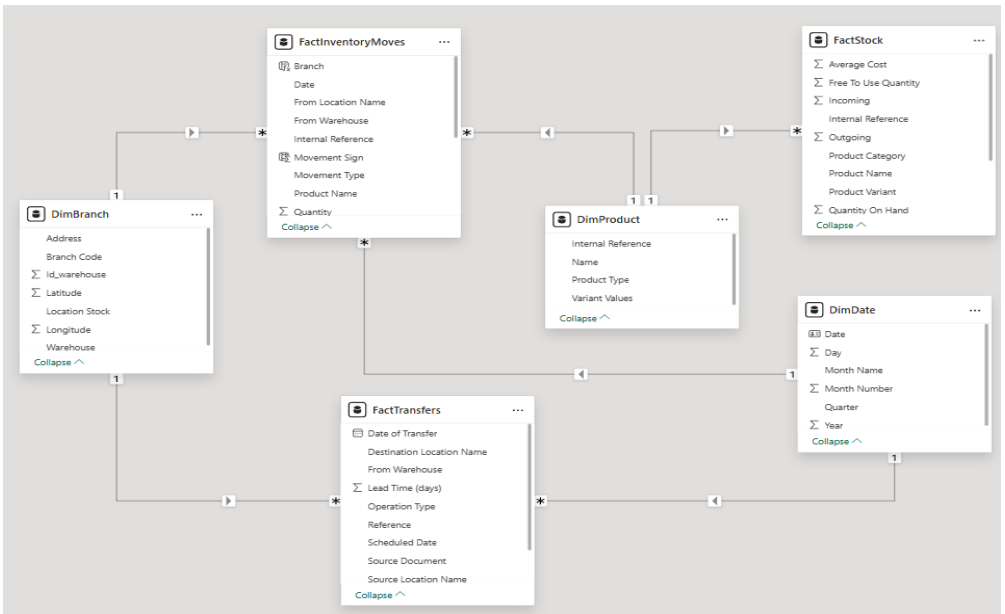
- **FactInventoryMoves:** It contains inventory movement data include (Incoming, Outgoing, Movement Type, Quantity).
- **FactStock:** It contains the current inventory status include (Quantity On Hand, Average Cost).
- **FactTransfers:** Contains data on transfers between branches.

Dimension Tables

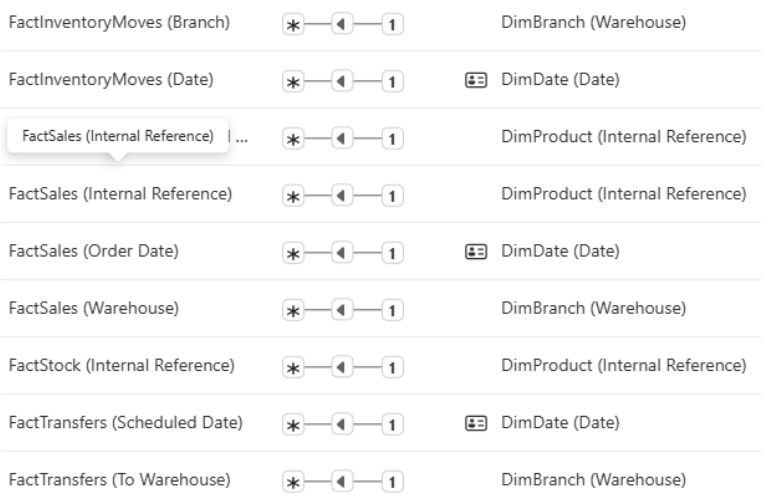
- DimProduct,DimBranch,DimDate
-

Relationships

DimProduct (1) → FactInventoryMoves (*)
DimBranch (1) → FactInventoryMoves (*)
DimDate (1) → FactInventoryMoves (*)
DimProduct (1) → FactStock (*)
DimProduct (1) → FactTransfers (*)
DimBranch (1) → FactTransfers (*)
DimDate (1) → FactTransfers (*)



All Relationship



3.8 System Architecture

The system architecture in this project is based on a layered architecture model that integrates the operational layer, the automation/integration layer, and the analytics and BI layer, with the aim of managing sales and inventory operations and then converting their data into reports and dashboards that support decision-making.

Operational Layer – ERP (Odoo)

- Odoo ERP is the platform for managing company operations.
- Units used: Sales, Inventory, Purchase.
- Employees record:
  - Sales orders and invoices.
  - Inventory transactions and updates.
  - Purchase orders and purchase requests.
- Operational data is stored in the Odoo database.

Automation & Integration Layer – n8n

- n8n acts as an automation and integration layer (middleware) between the operating system and the analytics component.
- Its primary functions include:
  - Running scheduled workflows to periodically update/synchronize data.
  - Performing simple data processing steps as needed (organization/filtering/preparation).
  - Ensuring data flow without manual intervention and minimizing errors.

Analytics & BI Layer – Power BI

- Sales and inventory data are extracted from Odoo (directly or via exported files/tables, depending on the project's requirements).
- Data models (Star Schema) are built within Power BI:
    - Sales model (FactSales + DimProduct/DimBranch/DimDate).
    - Inventory model (FactInventoryMoves/FactStock/FactTransfers + Dim tables).
- Interactive dashboards are created:
    - Sales Dashboard.
    - Inventory Dashboard.
- The results are used to support management decision-making (KPIs, trends, branch comparisons, inventory tracking).

Implementation & Development

4.1 Technologies Used

This section discusses the technologies and tools used in implementing the proposed system, which formed the practical basis for developing the project's operational and analytical solution. It explains the role of each technology in the system's implementation and how it integrates with the other components to achieve the project's objectives efficiently and reliably.

Odoo ERP

The Odoo ERP platform was used because it is an open-source, flexible, and user-friendly platform that provides integrated capabilities for managing operational processes within the company including :

- **Sales Module**
    - Set up the sales cycle from quotation creation to sales order confirmation.
    - Link sales orders to inventory to automatically update quantities upon execution.
    - Enable reordering rules to ensure product availability and prevent stockouts.
    - Track order status (in progress, delivered, completed).

- **Inventory Module**
    - Configure warehouses and storage locations.
    - Define products and their types, and link them to inventory accounts.
    - Implement reorder points to generate automatic purchase orders when stock levels are low
    - Track inventory movements (receipts, issues, transfers).
    - Ensure real-time inventory integration with sales and purchasing units.

- **Purchase Module**
    - Create purchase orders based on inventory needs.
    - Link suppliers to products and set purchase prices.
    - Automate the purchasing process through automatic reordering.
    - Track the status of purchase orders from order to receipt.
    - Automatically update inventory upon product receipt.

- **Supporting Modules**
    - **Point of Sale – POS:** Essential for implementing direct sales operations quickly, in addition to linking points of sale to the billing unit to record financial transactions.
    - **Invoicing:** Create sales invoices and link them to sales orders and point-of-sale system, in addition Record financial transactions in an organized and accurate manner

n8n (Automation & Integration Tool)

The n8n tool was used as an automation and integration platform to connect the Odoo system with other systems and services via REST APIs. This contributed to automating operational processes, reducing manual intervention, and improving overall system efficiency. The role of n8n within the system is as follows:

- **Scheduled Automation**
    - A daily trigger is set up to automatically run workflows.
    - It serves the system by ensuring that data and analytics are updated regularly without human intervention.
- **Data Extraction Preparation & Processing from Odoo**
    - n8n extracts sales, purchase, product, and supplier data from Odoo via REST APIs in JSON format
    - This step enables the collection of up-to-date operational data necessary for analysis and reporting.

    - After data collection, it is prepared by formatting, compiling, and processing it for further analysis.
    - This stage helps improve data quality before it is used in analysis or reporting.
- **Alerts & Notifications**
    - n8n generates alerts in critical situations such as low inventory or operational issues.
    - This helps management respond quickly before shortages occur or sales are negatively impacted.

- **Automated Actions**
    - Automatically generate purchase order suggestions as needed.
    - Create purchase orders directly within Odoo.
    - Serves the system by accelerating workflow and improving inventory management efficiency.

Power BI Analytics & Dashboards

In this section, Power BI tools were employed to analyze sales and inventory data and build interactive dashboards that support management in monitoring performance and making data-driven decisions. The analysis relied on data extracted from the Odoo ERP system after processing and transforming it into a suitable analytical model include:

- **Data Sources:** The system data was extracted from Odoo in Excel format and included the following tables:
    - Sales Orders Table
    - Order Details Table
    - Products Table
    - Stock Inventory Table
    - Inventory Movements Table
    - Branch Transfers Table

- **ETL Process (Extract – Transform – Load):** After data extraction, the processing and transformation phase was performed using Power Query. This process included:

    - Cleaning the data and correcting missing values.
    - Standardizing field and category labels
    - Separating some tables and merging others as needed.
    - Creating calculated columns and metrics using DAX.
    - Preparing date columns to support chronological analysis.

These steps contributed to improving data quality and ensuring its readiness for analysis.

- **Data Modeling:** Data models were built using Star Schema, following a business intelligence methodology, where:

    - A sales model was created.
    - An inventory model was created.
    - Fact tables were linked to dimension tables (Product, Branch, Date).

This facilitated analysis and improved the efficiency of reporting within Power BI.

- **Sales Dashboard Analysis**: The sales dashboard displays key performance indicators (KPIs) that help management understand sales performance across branches and products.

    Key KPIs:

    - Total Sales
    - Total Profit
    - Profit Margin
    - AOV (Average Order Value)
    - Total Quantity
    - Total Orders

    Visual Insights:

    - **Highest Profit Categories** :helps identify the product categories that generate the highest profits by using Donut Chart.
    - **Top 10 Selling Product:** This analysis shows the top-selling products in terms of quantity, helping to identify products in high demand and ensuring their continuous availability in branches by using Bar Chart.
    - **Profit by Branch:** This analysis allows for a comparison of the performance of different branches in terms of profits, and helps management to assess the efficiency of each branch and make decisions to improve the performance of the less profitable branches by using Pie Chart.
    - **Sales vs Target:** It is used to measure the extent to which planned sales targets have been achieved, and helps management to quickly monitor sales performance and take corrective action when needed by using Guage Chart.

- **Total Sales per Branch (Map):** Shows the geographical distribution of sales by branch.

- **Inventory Dashboard Analysis:** The inventory dashboard focuses on tracking quantities, movement, and inventory management efficiency.

  Key KPIs:

  - Total Stock Quantity
  - Free Stock Quantity
  - Total Stock Value
  - Inventory Turnover Rate
  - Days of Inventory

  Visual Insights:

  - **Total Movement:** It explains the relationship between quantities received, issued, and net change in inventory, which helps in understanding the dynamics of inventory movement and identifying potential imbalances by using Donut Chart.
  - **Stock by Category:** It shows the distribution of inventory by product category, and helps to identify categories that occupy a large proportion of inventory and may need to improve demand management or reduce overcrowding by using Pie Chart.
  - **Stock By Movement Type:** It shows the distribution of inventory by product category, and helps to identify categories that occupy a large proportion of inventory and may need to improve demand management or reduce overcrowding by using Column Chart.
  - **Current Inventory Level:** It displays the current inventory status in terms of quantity and value, and enables management to monitor inventory levels in real time and make quick decisions to avoid shortages or surpluses by using KPI Cards.

These visual analyses contributed to providing a comprehensive and integrated view of sales and inventory performance, which supported management in making data-driven operational and strategic decisions.

4.2 System Features

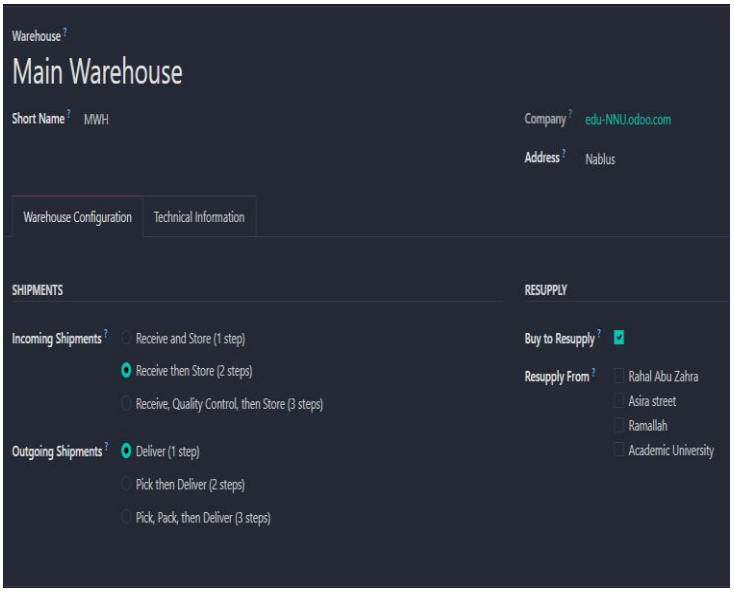
- **Integrated ERP Operations:** ensuring data consistency and easy access across all branches.
- **Real-Time Inventory Update**: enabling accurate and immediate tracking of available quantities**.**
- **Automated Data Synchronization**: minimizing human error and improving data reliability.
- **Scheduled Workflow Automation :**ensure continuous information updates.
- **Reorder Decision Support:** Supports reorder decisions by analyzing sales and inventory data and suggesting purchase orders when quantities are low.
- **Alert and Notification System :**Sends alerts in critical situations such as low inventory or the need for reordering, enabling a rapid response from management.
- **Data-Driven & Optimized Analytics**: This enables management to make operational and strategic decisions based on graphical analysis and KPIs.
- **Interactive Sales & Inventory Dashboard:** This supports real-time monitoring and data-driven decision-making.
- **Geographical Sales Analysis**: Analyze sales by branch geographic location to support expansion decisions and optimize distribution.

4.3 Screenshots & Interfaces

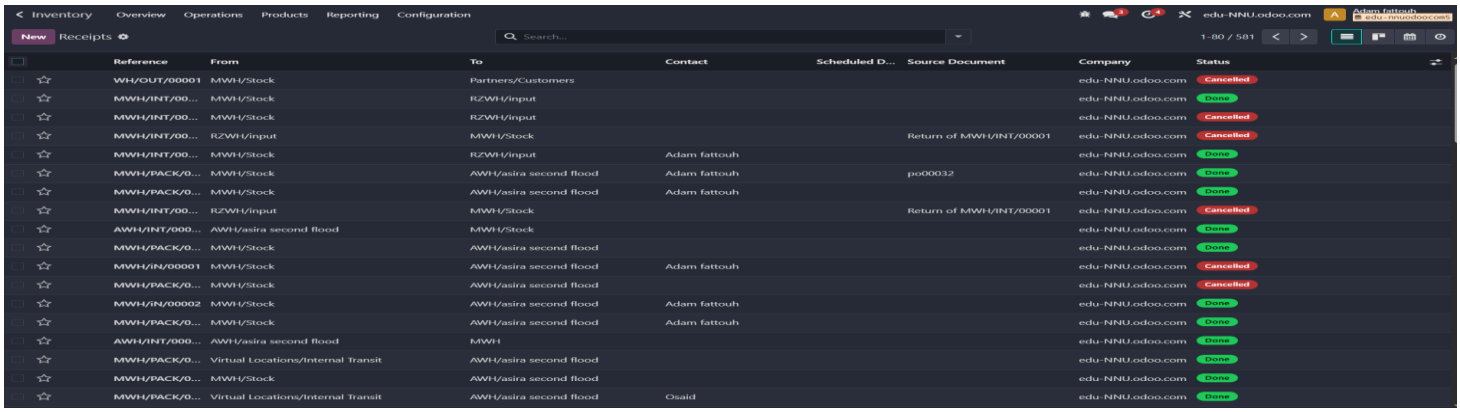
Odoo ERP

URL: https://www.odoo.com/odoo-enterprise/template/46636?token=380d8480-cd31-44ac-8fe3-6b30eff816c6

Note: zoom in to Show

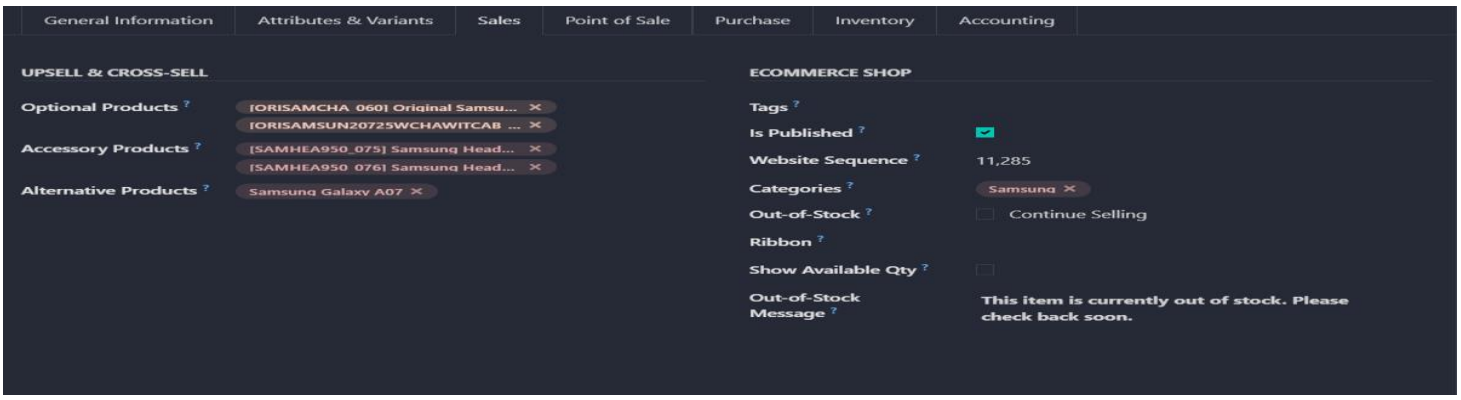


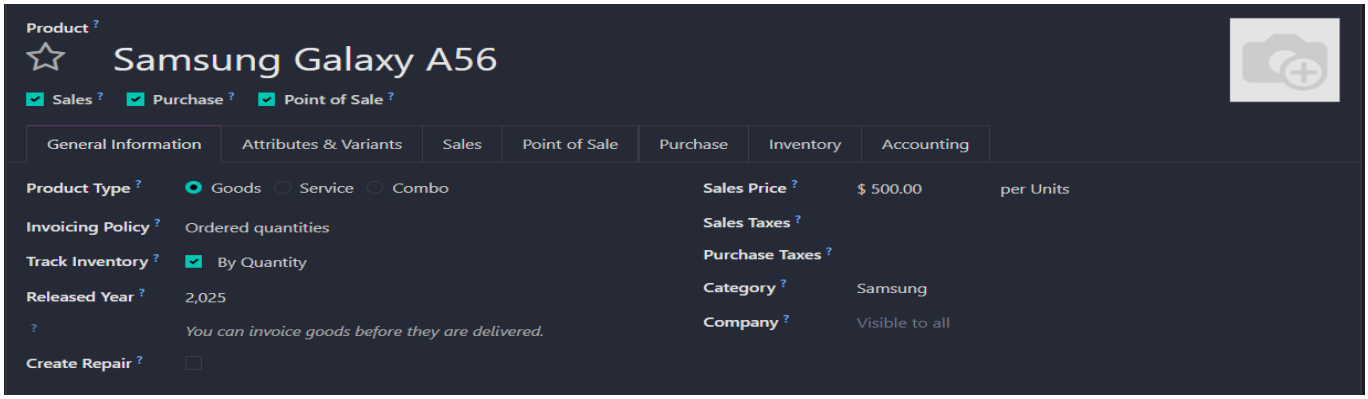
Warehouse	Location Stock	Address	Company
Main Warehouse	MWH/Stock	Nablus	edu-NNU.odoo.com
Rahal Abu Zahra	RZWH/input	Nablus Schools Street	edu-NNU.odoo.com
Asira street	AWH/Stock	Nablus - Asira Street	edu-NNU.odoo.com
Ramallah	RWH/Second Floor	Ramallah - Al Ersal Street	edu-NNU.odoo.com
Academic University	AUWH/Stock	Nablus - An Najah University - Academic	edu-NNU.odoo.com



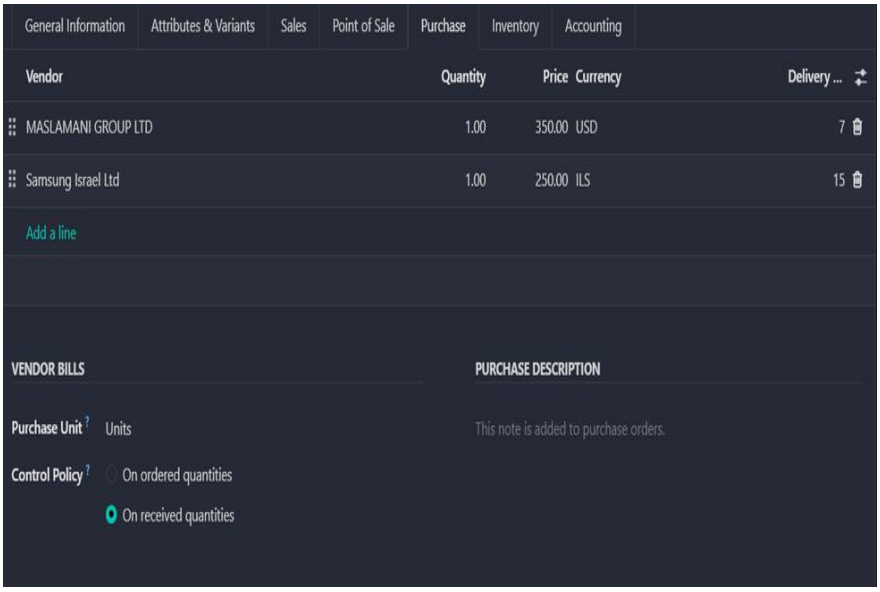
Reference	From	To	Contact	Scheduled D...	Source Document	Company	Status
WH/OUT/00001	MWH/Stock	Partners/Customers				edu-NNU.odoo.com	Cancelled
MWH/INT/00...	MWH/Stock	RZWH/input				edu-NNU.odoo.com	Done
MWH/INT/00...	MWH/Stock	RZWH/input				edu-NNU.odoo.com	Cancelled
MWH/INT/00...	RZWH/input	MWH/Stock			Return of MWH/INT/00001	edu-NNU.odoo.com	Cancelled
MWH/INT/00...	MWH/Stock	RZWH/input	Adam fattouh			edu-NNU.odoo.com	Done
MWH/PACK/0...	MWH/Stock	AWH/asira second flood	Adam fattouh		po00032	edu-NNU.odoo.com	Done
MWH/PACK/0...	MWH/Stock	AWH/asira second flood	Adam fattouh			edu-NNU.odoo.com	Done
MWH/INT/00...	RZWH/input	MWH/Stock			Return of MWH/INT/00001	edu-NNU.odoo.com	Cancelled
AWH/INT/000...	AWH/asira second flood	MWH/Stock				edu-NNU.odoo.com	Done
MWH/PACK/0...	MWH/Stock	AWH/asira second flood				edu-NNU.odoo.com	Done
MWH/IN/00001	MWH/Stock	AWH/asira second flood	Adam fattouh			edu-NNU.odoo.com	Cancelled
MWH/PACK/0...	MWH/Stock	AWH/asira second flood				edu-NNU.odoo.com	Cancelled
MWH/IN/00002	MWH/Stock	AWH/asira second flood	Adam fattouh			edu-NNU.odoo.com	Done
MWH/PACK/0...	MWH/Stock	AWH/asira second flood	Adam fattouh			edu-NNU.odoo.com	Done
AWH/INT/000...	AWH/asira second flood	MWH				edu-NNU.odoo.com	Done
MWH/PACK/0...	Virtual Locations/Internal Transit	AWH/asira second flood				edu-NNU.odoo.com	Done
MWH/PACK/0...	MWH/Stock	AWH/asira second flood				edu-NNU.odoo.com	Done
MWH/PACK/0...	Virtual Locations/Internal Transit	AWH/asira second flood	Osaid			edu-NNU.odoo.com	Done

Internal Reference	Name	Variant Values	Sales Price	Cost	On Hand	Forecasted	Unit
Samsung Galaxy A56 (9)				3,150.00			
SAMGALA56_003	Samsung Galaxy A56	Storage(Standard): 64GB, color (samsung): Black	500.00	350.00	73.00	55.00	Units
SAMGALA56_004	Samsung Galaxy A56	Storage(Standard): 64GB, color (samsung): White	500.00	350.00	195.00	194.00	Units
SAMGALA56_005	Samsung Galaxy A56	Storage(Standard): 64GB, color (samsung): Silver	500.00	350.00	96.00	96.00	Units
SAMGALA56_006	Samsung Galaxy A56	Storage(Standard): 128GB, color (samsung): Black	600.00	350.00	88.00	86.00	Units
SAMGALA56_007	Samsung Galaxy A56	Storage(Standard): 128GB, color (samsung): White	600.00	350.00	80.00	79.00	Units
SAMGALA56_008	Samsung Galaxy A56	Storage(Standard): 128GB, color (samsung): Silver	600.00	350.00	96.00	94.00	Units
SAMGALA56_009	Samsung Galaxy A56	Storage(Standard): 256GB, color (samsung): Black	700.00	350.00	96.00	94.00	Units
SAMGALA56_010	Samsung Galaxy A56	Storage(Standard): 256GB, color (samsung): White	700.00	350.00	88.00	87.00	Units
SAMGALA56_011	Samsung Galaxy A56	Storage(Standard): 256GB, color (samsung): Silver	700.00	350.00	79.00	77.00	Units
Samsung Galaxy A07 (12)				3,600.20			
SAMGALA07_012	Samsung Galaxy A07	Storage(Standard): 64GB, color (samsung): Black	500.00	300.20	91.00	91.00	Units
SAMGALA07_013	Samsung Galaxy A07	Storage(Standard): 64GB, color (samsung): White	500.00	300.00	232.00	230.00	Units
SAMGALA07_014	Samsung Galaxy A07	Storage(Standard): 64GB, color (samsung): Silver	500.00	300.00	195.00	192.00	Units
SAMGALA07_015	Samsung Galaxy A07	Storage(Standard): 128GB, color (samsung): Black	600.00	300.00	202.00	199.00	Units
SAMGALA07_016	Samsung Galaxy A07	Storage(Standard): 128GB, color (samsung): White	600.00	300.00	202.00	199.00	Units
SAMGALA07_017	Samsung Galaxy A07	Storage(Standard): 128GB, color (samsung): Silver	600.00	300.00	202.00	198.00	Units






Category
Apple
Parent Category
ACCOUNT PROPERTIES
Price Difference Account
Income Account 400002 sales Apple
Expense Account 110200 Stock Interim (Received)
Downpayment Account
ACCOUNT STOCK PROPERTIES
Stock Valuation Account 400003 Inventory
Stock Journal Inventory Valuation
Stock Input Account 110200 Stock Interim (Received)
Stock Output Account 500000 Cost of Goods Sold
Set other input/output accounts on specific locations .
LOGISTICS
Routes
Ramallah: Supply Product from Ma...
معرض الكادمية: Supply Product fro...
Rahal Abu Zahra: Supply Product fr...
Asira street: Supply Product from ...
INVENTORY VALUATION
Costing Method First In First Out (FIFO)
Inventory Valuation Automated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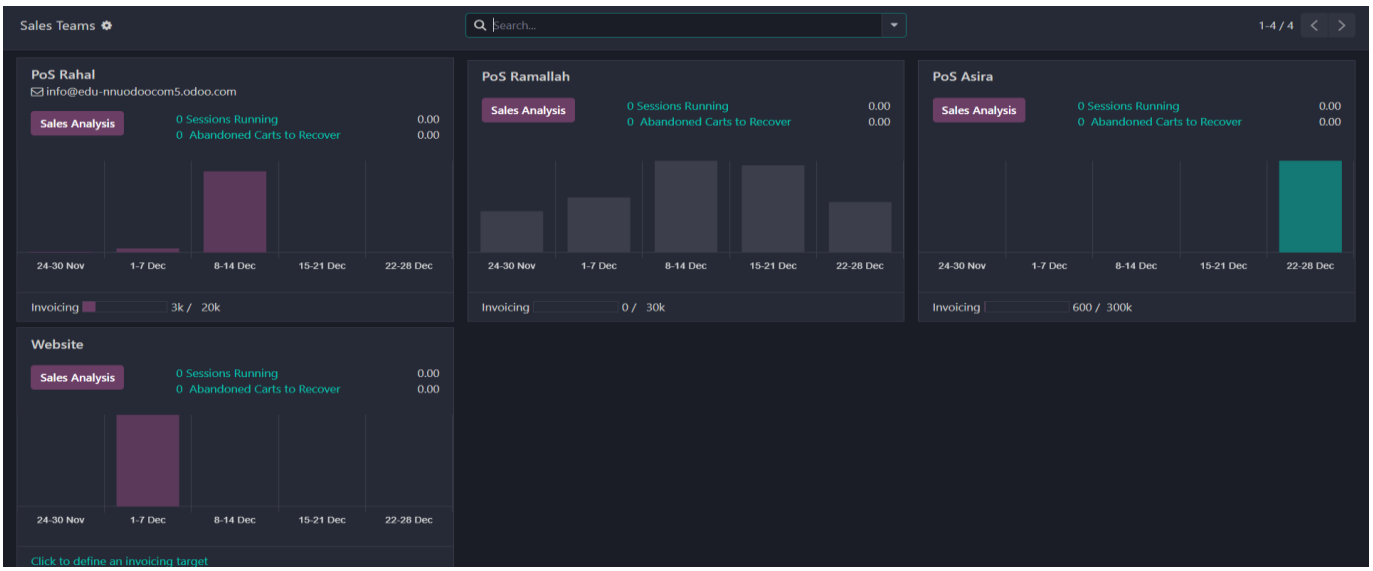
Attributes & Variants
Sales
Point of Sale
Purchase
Inventory
Accounting
Vendor
Quantity
Price
Currency
Delivery ...
MASLAMANI GROUP LTD 1.00 350.00 USD 7
Samsung Israel Ltd 1.00 250.00 ILS 15
Add a line
VENDOR BILLS
Purchase Unit Units
Control Policy
On ordered quantities
On received quantities
PURCHASE DESCRIPTION
This note is added to purchase orders.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1-4 / 4
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info@edu-nnuodoocom5.odoo.com
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0 Abandoned Carts to Recover 0.00
24-30 Nov
1-7 Dec
8-14 Dec
15-21 Dec
22-28 Dec
Invoicing 3k / 20k
PoS Ramallah
Sales Analysis
0 Sessions Running 0.00
0 Abandoned Carts to Recover 0.00
Invoicing 0 / 30k
PoS Asira
Sales Analysis
0 Sessions Running 0.00
0 Abandoned Carts to Recover 0.00
Invoicing 600 / 300k
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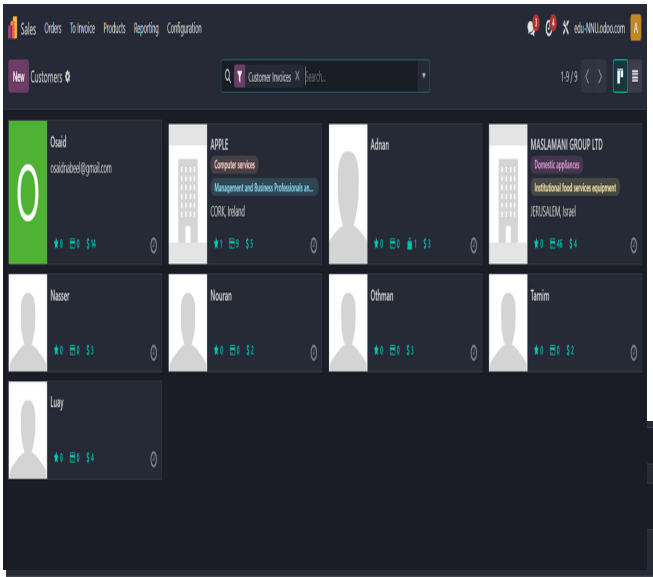
Sales Analysis
0 Sessions Running 0.00
0 Abandoned Carts to Recover 0.00
Click to define an invoicing target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Orders
To Invoice
Products
Reporting
Configuration
edu-NNU.odoo.com
New
Customers
Customer Invoices
1-9/9
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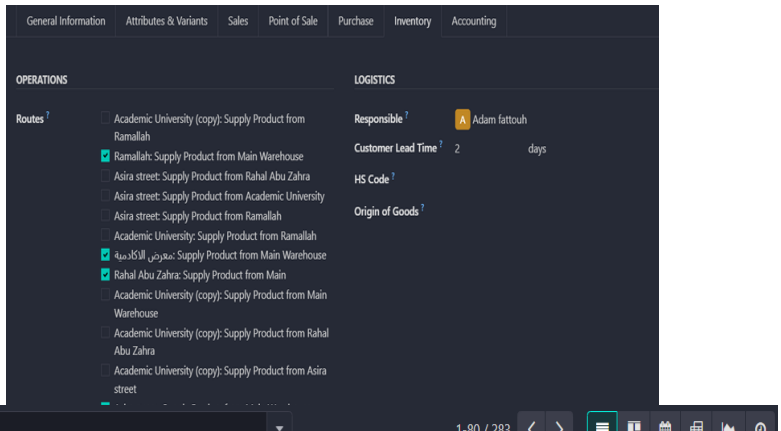
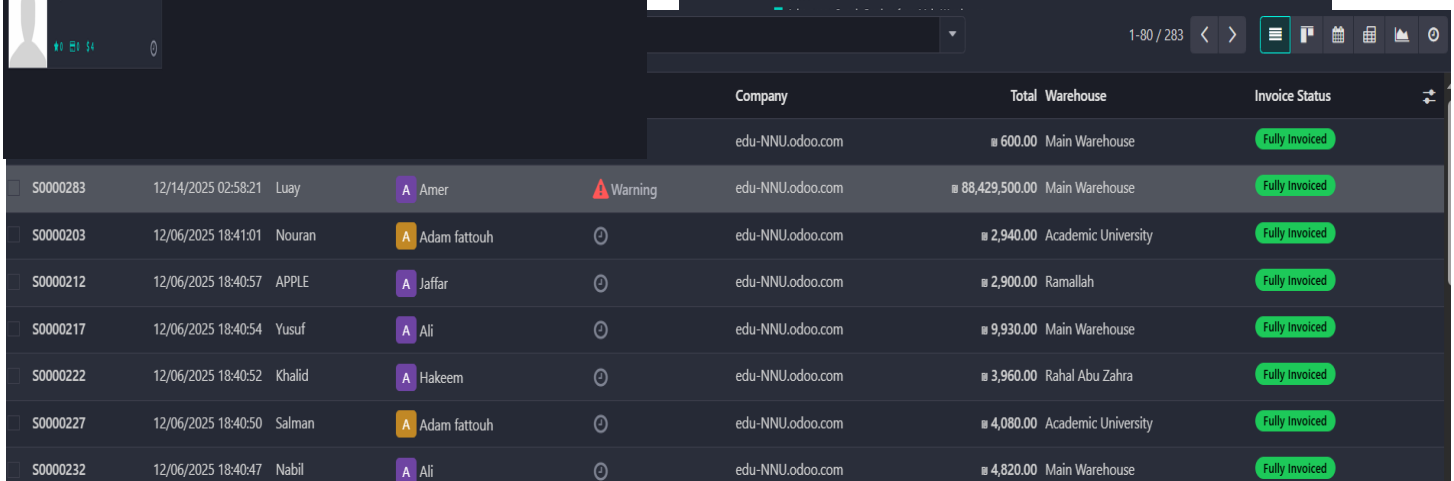
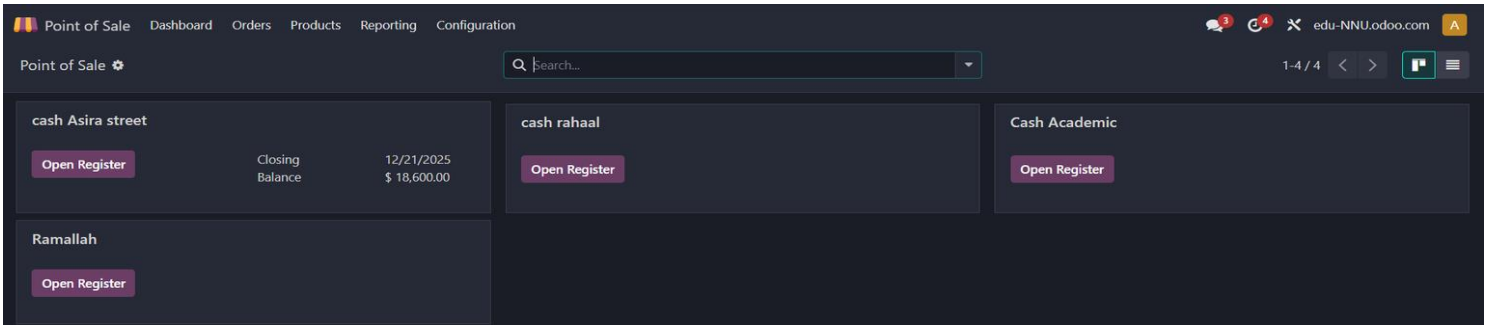
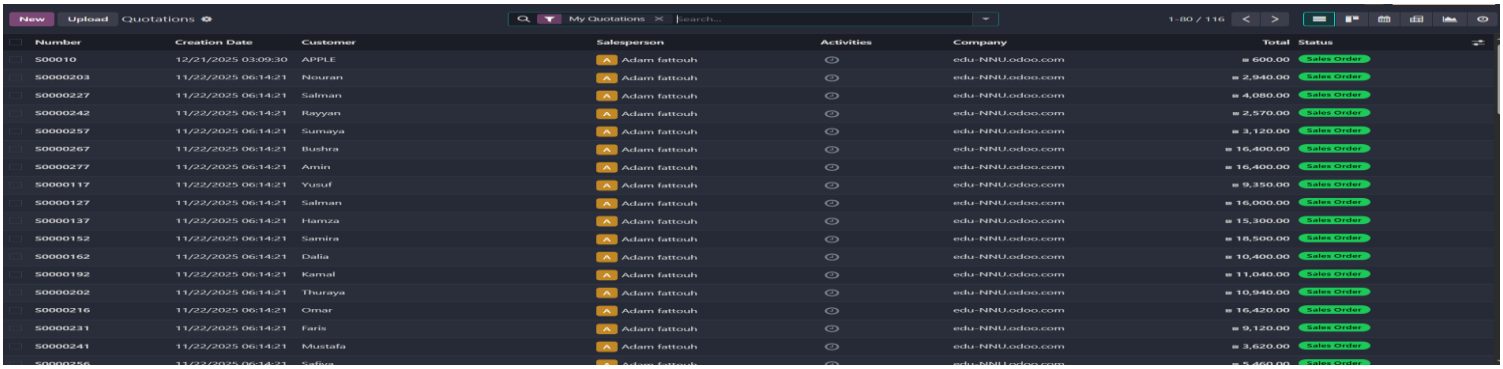
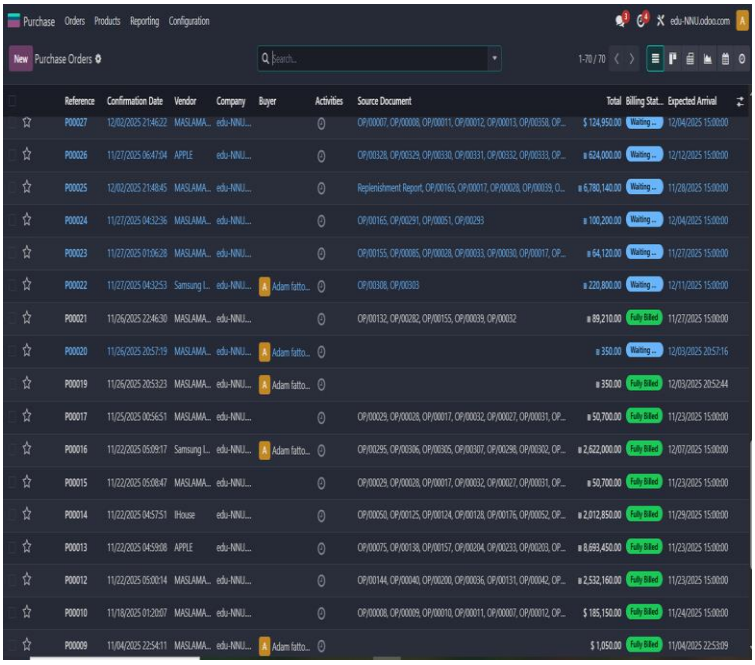
osaidnabeel@gmail.com
APPLE
Computer services
Management and Business Professionals an...
CORK, Ireland
Adnan
MASLAMANI GROUP LTD
Domestic appliances
Institutional food services equipment
JERUSALEM, Israel
Nasser
Nouran
Othman
Tamim
Luay


General Information
Attributes & Variants
Sales
Point of Sale
Purchase
Inventory
Accounting
OPERATIONS
Routes
Academic University (copy): Supply Product from Ramallah
Ramallah: Supply Product from Main Warehouse
Asira street: Supply Product from Rahal Abu Zahra
Asira street: Supply Product from Academic University
Asira street: Supply Product from Ramallah
Academic University: Supply Product from Ramallah
معرض الكادمية: Supply Product from Main Warehouse
Rahal Abu Zahra: Supply Product from Main
Academic University (copy): Supply Product from Main Warehouse
Academic University (copy): Supply Product from Rahal Abu Zahra
Academic University (copy): Supply Product from Asira street
LOGISTICS
Responsible Adam fattouh
Customer Lead Time 2 days
HS Code
Origin of Goods


1-80 / 283
Company
Total
Warehouse
Invoice Status
edu-NNU.odoo.com 600.00 Main Warehouse Fully Invoiced
S0000283 12/14/2025 02:58:21 Luay Amer Warning edu-NNU.odoo.com 88,429,500.00 Main Warehouse Fully Invoiced
S0000203 12/06/2025 18:41:01 Nouran Adam fattouh edu-NNU.odoo.com 2,940.00 Academic University Fully Invoiced
S0000212 12/06/2025 18:40:57 APPLE Jaffar edu-NNU.odoo.com 2,900.00 Ramallah Fully Invoiced
S0000217 12/06/2025 18:40:54 Yusuf Ali edu-NNU.odoo.com 9,930.00 Main Warehouse Fully Invoiced
S0000222 12/06/2025 18:40:52 Khalid Hakeem edu-NNU.odoo.com 3,960.00 Rahal Abu Zahra Fully Invoiced
S0000227 12/06/2025 18:40:50 Salman Adam fattouh edu-NNU.odoo.com 4,080.00 Academic University Fully Invoiced
S0000232 12/06/2025 18:40:47 Nabil Ali edu-NNU.odoo.com 4,820.00 Main Warehouse Fully Invoiced


Point of Sale
Dashboard
Orders
Products
Reporting
Configuration
edu-NNU.odoo.com
Point of Sale
Search...
1-4 / 4
cash Asira street
Open Register
Closing
Balance
12/21/2025
$ 18,600.00
cash rahaal
Open Register
Cash Academic
Open Register
Ramallah
Open Register


New
Upload
Quotations
My Quotations
Search...
1-80 / 116
Number
Creation Date
Customer
Salesperson
Activities
Company
Total
Status
S00010 12/21/2025 03:09:30 APPLE Adam fattouh edu-NNU.odoo.com ≡ 600.00 Sales Order
S0000203 11/22/2025 06:14:21 Nouran Adam fattouh edu-NNU.odoo.com ≡ 2,940.00 Sales Order
S0000227 11/22/2025 06:14:21 Salman Adam fattouh edu-NNU.odoo.com ≡ 4,080.00 Sales Order
S0000242 11/22/2025 06:14:21 Rayyan Adam fattouh edu-NNU.odoo.com ≡ 2,570.00 Sales Order
S0000257 11/22/2025 06:14:21 Sumaya Adam fattouh edu-NNU.odoo.com ≡ 3,120.00 Sales Order
S0000267 11/22/2025 06:14:21 Bushra Adam fattouh edu-NNU.odoo.com ≡ 16,400.00 Sales Order
S0000277 11/22/2025 06:14:21 Amin Adam fattouh edu-NNU.odoo.com ≡ 16,400.00 Sales Order
S0000117 11/22/2025 06:14:21 Yusuf Adam fattouh edu-NNU.odoo.com ≡ 9,350.00 Sales Order
S0000127 11/22/2025 06:14:21 Salman Adam fattouh edu-NNU.odoo.com ≡ 16,000.00 Sales Order
S0000137 11/22/2025 06:14:21 Hamza Adam fattouh edu-NNU.odoo.com ≡ 15,300.00 Sales Order
S0000152 11/22/2025 06:14:21 Samira Adam fattouh edu-NNU.odoo.com ≡ 18,500.00 Sales Order
S0000162 11/22/2025 06:14:21 Dalia Adam fattouh edu-NNU.odoo.com ≡ 10,400.00 Sales Order
S0000192 11/22/2025 06:14:21 Kamal Adam fattouh edu-NNU.odoo.com ≡ 11,040.00 Sales Order
S0000202 11/22/2025 06:14:21 Thuraya Adam fattouh edu-NNU.odoo.com ≡ 10,940.00 Sales Order
S0000216 11/22/2025 06:14:21 Omar Adam fattouh edu-NNU.odoo.com ≡ 16,420.00 Sales Order
S0000231 11/22/2025 06:14:21 Faris Adam fattouh edu-NNU.odoo.com ≡ 9,120.00 Sales Order
S0000241 11/22/2025 06:14:21 Mustafa Adam fattouh edu-NNU.odoo.com ≡ 3,620.00 Sales Order


Purchase
Orders
Products
Reporting
Configuration
edu-NNU.odoo.com
New
Purchase Orders
Search...
1-70 / 70
Reference
Confirmation Date
Vendor
Company
Buyer
Activities
Source Document
Total
Billing Stat...
Expected Arrival
P00027 12/02/2025 21:46:22 MASLAMA... edu-NNU... OP/00007, OP/00008, OP/00011, OP/00012, OP/00013, OP/00358, OP... $ 124,950.00 Waiting ... 12/04/2025 15:00:00
P00026 11/27/2025 06:47:04 APPLE edu-NNU... OP/00328, OP/00329, OP/00330, OP/00331, OP/00332, OP/00333, OP... ≡ 624,000.00 Waiting ... 12/12/2025 15:00:00
P00025 12/02/2025 21:48:45 MASLAMA... edu-NNU... Replenishment Report, OP/00165, OP/00017, OP/00028, OP/00039, O... ≡ 6,780,140.00 Waiting ... 11/28/2025 15:00:00
P00024 11/27/2025 04:32:36 MASLAMA... edu-NNU... OP/00165, OP/00291, OP/00051, OP/00293 ≡ 100,200.00 Waiting ... 12/04/2025 15:00:00
P00023 11/27/2025 01:06:28 MASLAMA... edu-NNU... OP/00155, OP/00085, OP/00028, OP/00033, OP/00030, OP/00017, OP... ≡ 64,120.00 Waiting ... 11/27/2025 15:00:00
P00022 11/27/2025 04:32:53 Samsung L... edu-NNU... Adam fatto... OP/00308, OP/00303 ≡ 220,800.00 Waiting ... 12/11/2025 15:00:00
P00021 11/26/2025 22:46:30 MASLAMA... edu-NNU... OP/00132, OP/00282, OP/00155, OP/00039, OP/00032 ≡ 89,210.00 Fully Billed 11/27/2025 15:00:00
P00020 11/26/2025 20:57:19 MASLAMA... edu-NNU... Adam fatto... ≡ 350.00 Waiting ... 12/03/2025 20:57:16
P00019 11/26/2025 20:53:23 MASLAMA... edu-NNU... Adam fatto... ≡ 350.00 Fully Billed 12/03/2025 20:52:44
P00017 11/25/2025 00:56:51 MASLAMA... edu-NNU... OP/00029, OP/00028, OP/00017, OP/00032, OP/00027, OP/00031, OP... ≡ 50,700.00 Fully Billed 11/23/2025 15:00:00
P00016 11/22/2025 05:09:17 Samsung L... edu-NNU... Adam fatto... OP/00295, OP/00306, OP/00305, OP/00307, OP/00298, OP/00302, OP... ≡ 2,622,000.00 Fully Billed 12/07/2025 15:00:00
P00015 11/22/2025 05:08:47 MASLAMA... edu-NNU... OP/00029, OP/00028, OP/00017, OP/00032, OP/00027, OP/00031, OP... ≡ 50,700.00 Fully Billed 11/23/2025 15:00:00
P00014 11/22/2025 04:57:51 IHouse edu-NNU... OP/00050, OP/00125, OP/00124, OP/00128, OP/00176, OP/00052, OP... ≡ 2,012,850.00 Fully Billed 11/29/2025 15:00:00
P00013 11/22/2025 04:59:08 APPLE edu-NNU... OP/00075, OP/00138, OP/00157, OP/00204, OP/00233, OP/00303, OP... ≡ 8,693,450.00 Fully Billed 11/23/2025 15:00:00
P00012 11/22/2025 05:00:14 MASLAMA... edu-NNU... OP/00144, OP/00040, OP/00200, OP/00036, OP/00131, OP/00042, OP... ≡ 2,532,160.00 Fully Billed 11/23/2025 15:00:00
P00010 11/18/2025 01:20:07 MASLAMA... edu-NNU... OP/00008, OP/00009, OP/00010, OP/00011, OP/00007, OP/00012, OP... $ 185,150.00 Fully Billed 11/24/2025 15:00:00
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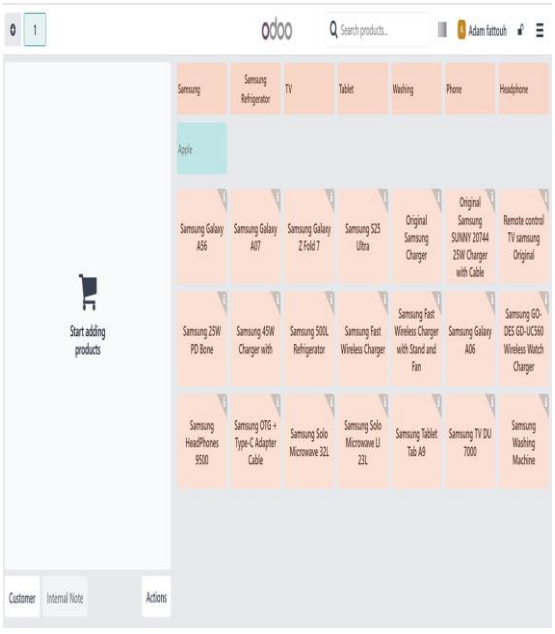
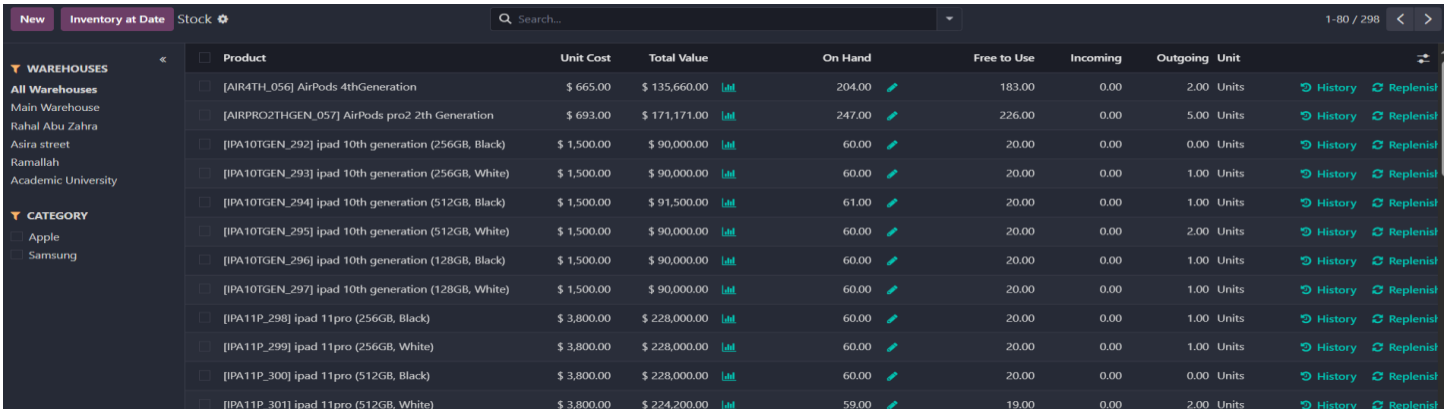
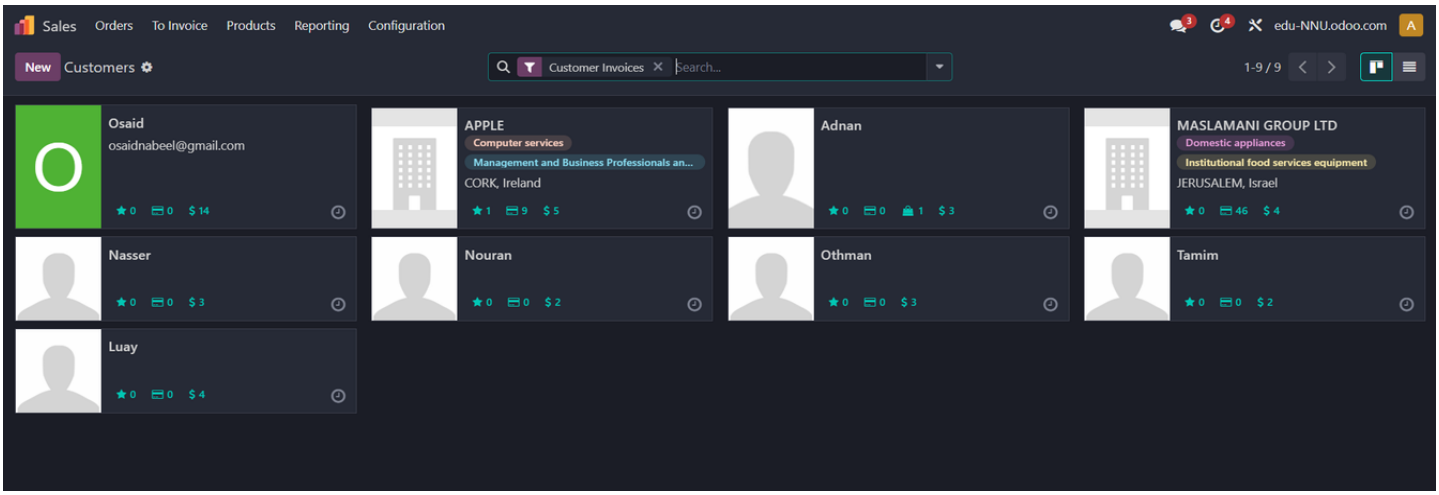
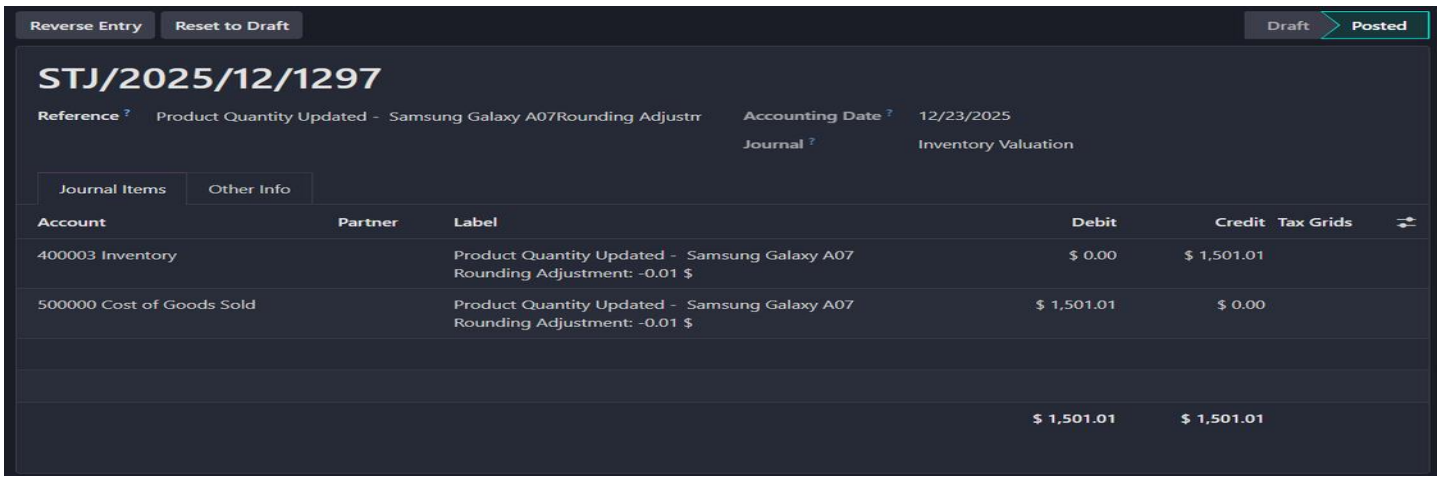
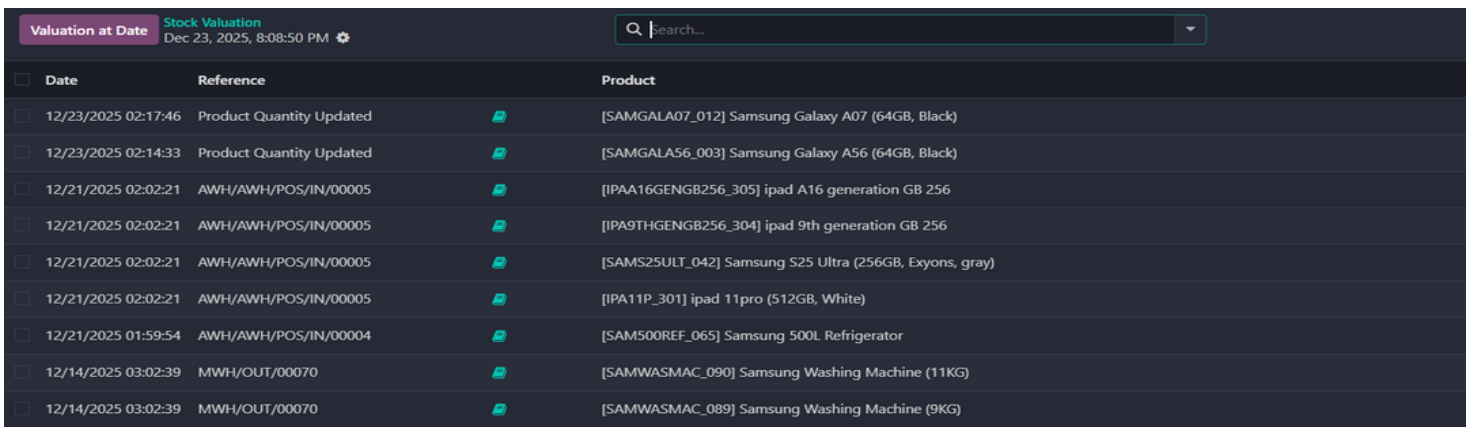

odoo
Search products...
Adam fattouh
Samsung
Samsung Refrigerator
TV
Tablet
Washing
Phone
Headphone
Apple
Samsung Galaxy A56
Samsung Galaxy A07
Samsung Galaxy Z Fold 7
Samsung S25 Ultra
Original Samsung Charger
Original Samsung SUNNY 20744 25W Charger with Cable
Remote control TV samsung Original
Samsung 25W PD Bone
Samsung 45W Charger with
Samsung 500L Refrigerator
Samsung Fast Wireless Charger
Samsung Fast Wireless Charger with Stand and Fan
Samsung Galaxy A06
Samsung GO-DES GD-UC560 Wireless Watch Charger
Samsung HeadPhones 9500
Samsung OTG + Type-C Adapter Cable
Samsung Solo Microwave 32L
Samsung Solo Microwave LI 23L
Samsung Tablet Tab A9
Samsung TV DU 7000
Samsung Washing Machine
Start adding products
Customer
Internal Note
Actions


New
Inventory at Date
Stock
Search...
1-80 / 298
WAREHOUSES
All Warehouses
Main Warehouse
Rahal Abu Zahra
Asira street
Ramallah
Academic University
CATEGORY
Apple
Samsung
Product
Unit Cost
Total Value
On Hand
Free to Use
Incoming
Outgoing
Unit
[AIR4TH_056] AirPods 4thGeneration $ 665.00 $ 135,660.00 204.00 183.00 0.00 2.00 Units History Replenish
[AIRPRO2THGEN_057] AirPods pro2 2th Generation $ 693.00 $ 171,171.00 247.00 226.00 0.00 5.00 Units History Replenish
[IPA10TGEN_292] ipad 10th generation (256GB, Black) $ 1,500.00 $ 90,000.00 60.00 20.00 0.00 0.00 Units History Replenish
[IPA10TGEN_293] ipad 10th generation (256GB, White) $ 1,500.00 $ 90,000.00 60.00 20.00 0.00 1.00 Units History Replenish
[IPA10TGEN_294] ipad 10th generation (512GB, Black) $ 1,500.00 $ 91,500.00 61.00 20.00 0.00 1.00 Units History Replenish
[IPA10TGEN_295] ipad 10th generation (512GB, White) $ 1,500.00 $ 90,000.00 60.00 20.00 0.00 2.00 Units History Replenish
[IPA10TGEN_296] ipad 10th generation (128GB, Black) $ 1,500.00 $ 90,000.00 60.00 20.00 0.00 1.00 Units History Replenish
[IPA10TGEN_297] ipad 10th generation (128GB, White) $ 1,500.00 $ 90,000.00 60.00 20.00 0.00 1.00 Units History Replenish
[IPA11P_298] ipad 11pro (256GB, Black) $ 3,800.00 $ 228,000.00 60.00 20.00 0.00 1.00 Units History Replenish
[IPA11P_299] ipad 11pro (256GB, White) $ 3,800.00 $ 228,000.00 60.00 20.00 0.00 1.00 Units History Replenish
[IPA11P_300] ipad 11pro (512GB, Black) $ 3,800.00 $ 228,000.00 60.00 20.00 0.00 0.00 Units History Replenish
[IPA11P_301] ipad 11pro (512GB, White) $ 3,800.00 $ 224,200.00 59.00 19.00 0.00 2.00 Units History Replenish

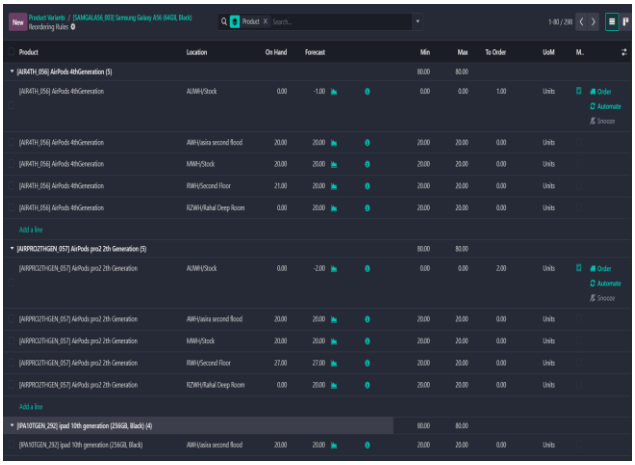

New
Routes
Search...
1-24 / 24
Route
Company
معرض الاكاديمية: Supply Product from Main Warehouse
Ramallah: Supply Product from Main Warehouse
Rahal Abu Zahra: Supply Product from Main
Asira street: Supply Product from Rahal Abu Zahra
Asira street: Supply Product from Academic University
Asira street: Supply Product from Ramallah
Academic University: Supply Product from Ramallah
Academic University (copy): Supply Product from Main Warehouse
Academic University (copy): Supply Product from Rahal Abu Zahra
Academic University (copy): Supply Product from Asira street
Academic University (copy): Supply Product from Ramallah
Asira street: Supply Product from Main Warehouse
Buy
Main Warehouse: Receive in 2 steps (input + stock)
edu-NNU.odoo.com

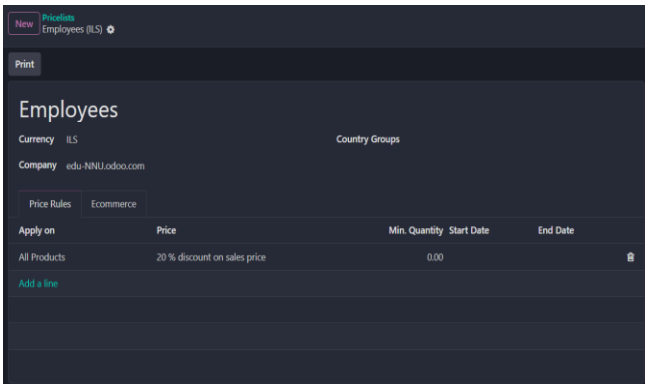

Sales
Orders
To Invoice
Products
Reporting
Configuration
edu-NNU.odoo.com
New
Customers
Customer Invoices
Search...
1-9 / 9
Osaid
osaidnabeel@gmail.com
APPLE
Computer services
Management and Business Professionals an...
CORK, Ireland
Adnan
MASLAMANI GROUP LTD
Domestic appliances
Institutional food services equipment
JERUSALEM, Israel
Nasser
Nouran
Othman
Tamim
Luay

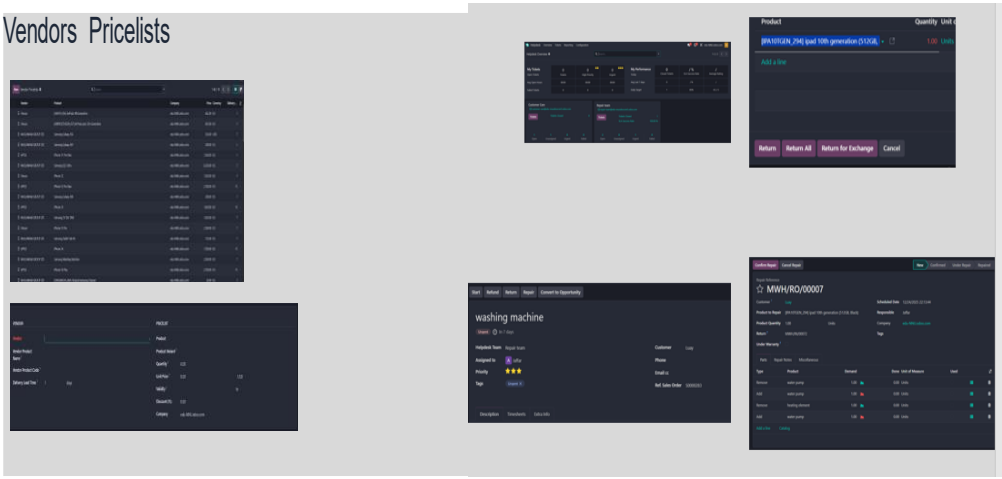

Reverse Entry
Reset to Draft
Draft
Posted
STJ/2025/12/1297
Reference
Product Quantity Updated - Samsung Galaxy A07Rounding Adjustr
Accounting Date
12/23/2025
Journal
Inventory Valuation
Journal Items
Other Info
Account
Partner
Label
Debit
Credit
Tax Grids
400003 Inventory
Product Quantity Updated - Samsung Galaxy A07
Rounding Adjustment: -0.01 $
$ 0.00
$ 1,501.01
500000 Cost of Goods Sold
Product Quantity Updated - Samsung Galaxy A07
Rounding Adjustment: -0.01 $
$ 1,501.01
$ 0.00
$ 1,501.01
$ 1,501.01

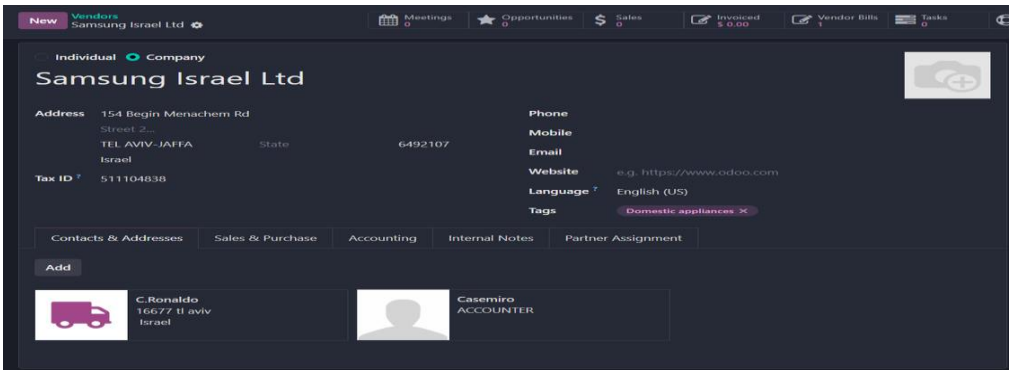

Valuation at Date
Stock Valuation
Dec 23, 2025, 8:08:50 PM
Search...
Date
Reference
Product
12/23/2025 02:17:46
Product Quantity Updated
[SAMGALA07_012] Samsung Galaxy A07 (64GB, Black)
12/23/2025 02:14:33
Product Quantity Updated
[SAMGALA56_003] Samsung Galaxy A56 (64GB, Black)
12/21/2025 02:02:21
AWH/AWH/POS/IN/00005
[IPAA16GENGB256_305] ipad A16 generation GB 256
12/21/2025 02:02:21
AWH/AWH/POS/IN/00005
[IPA9THGENGB256_304] ipad 9th generation GB 256
12/21/2025 02:02:21
AWH/AWH/POS/IN/00005
[SAMS25ULT_042] Samsung S25 Ultra (256GB, Exyons, gray)
12/21/2025 02:02:21
AWH/AWH/POS/IN/00005
[IPA11P_301] ipad 11pro (512GB, White)
12/21/2025 01:59:54
AWH/AWH/POS/IN/00004
[SAM500REF_065] Samsung 500L Refrigerator
12/14/2025 03:02:39
MWH/OUT/00070
[SAMWASMAC_090] Samsung Washing Machine (11KG)
12/14/2025 03:02:39
MWH/OUT/00070
[SAMWASMAC_089] Samsung Washing Machine (9KG)


Route
Ramallah: Supply Product from Main Warehouse
Sequence
0
Supplied Warehouse
Ramallah
Company
edu-NNU.odoo.com
APPLICABLE ON
Select the places where this route can be selected
Product Categories
Products
Shipping Methods
Warehouses
Ramallah
Sales Order Lines
RULES
Action
Source Location
Destination Location
Pull From
MWH/Stock
RWH/Second Floor
Add a line

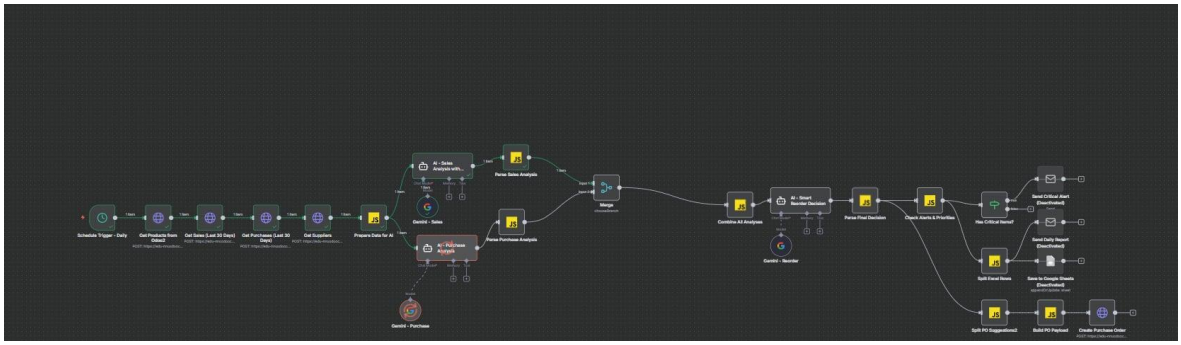



New
Pricelists
Employees (ILS)
Print
Employees
Currency
ILS
Country Groups
Company
edu-NNU.odoo.com
Price Rules
Ecommerce
Apply on
Price
Min. Quantity
Start Date
End Date
All Products
20 % discount on sales price
0.00
Add a line


Vendors Pricelists
Return
Return All
Return for Exchange
Cancel
washing machine
MWH/RO/00007

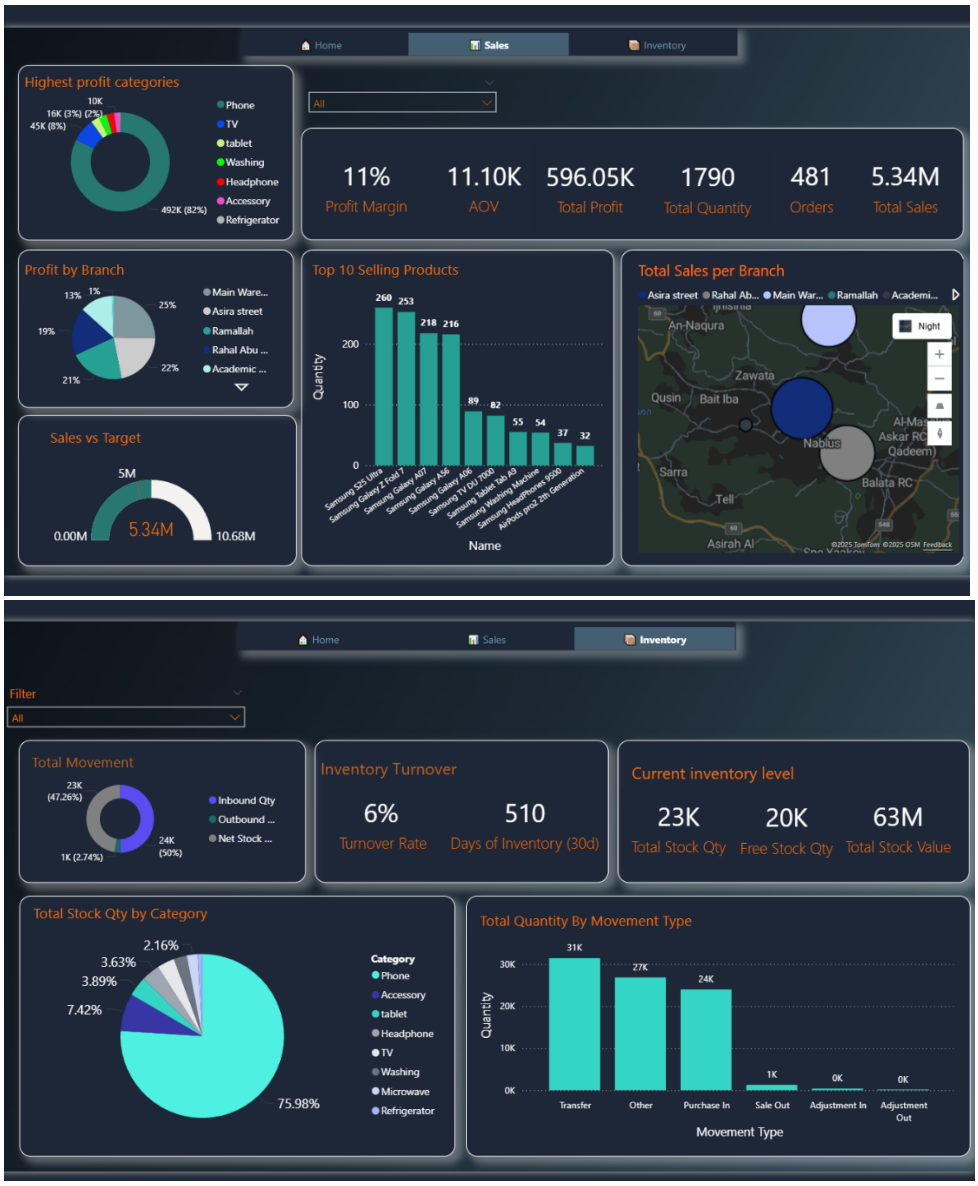

New
Vendors
Samsung Israel Ltd
Meetings
Opportunities
Sales
Invoiced
$ 0.00
Vendor Bills
Tasks
Individual
Company
Samsung Israel Ltd
Address
154 Begin Menachem Rd
Street 2...
TEL AVIV-JAFFA
State
6492107
Israel
Tax ID
511104838
Phone
Mobile
Email
Website
e.g. https://www.odoo.com
Language
English (US)
Tags
Domestic appliances
Contacts & Addresses
Sales & Purchase
Accounting
Internal Notes
Partner Assignment
Add
C.Ronaldo
16677 tl aviv
Israel
Casemiro
ACCOUNTER

N8N Workflow



Power BI Dashboards

URL: https://app.powerbi.com/links/tOfC0BrUCK?ctid=ed2a04bd-65e6-4522-b546-ef0b0c7645df&pbi_source=linkShare



Testing & Evaluation

5.1 Testing

The system underwent manual testing to verify the functionality of its core functions. The test involved executing real-world scenarios such as creating sales orders, issuing invoices, updating inventory, and executing purchase orders to ensure the integrity of the system modules and the accuracy of the resulting data. The test included the following:

- Creating sales orders from multiple branches.
- Automatic invoicing.

- Updating inventory after sales transactions.
- Executing purchase orders when stock levels are low.
- Verifying data migration to Power BI.
- Ensuring the dashboard is updated after any updates.

The test results demonstrated that the system functions seamlessly and achieves its defined operational objectives without any fundamental errors.

5.2 Evaluation Based on Dashboards

The system was evaluated based on analytical results extracted from the sales and inventory dashboards. These dashboards demonstrated the system's ability to provide clear performance indicators that help management understand branch performance, sales activity, and inventory management efficiency.

5.3 Recommendations

Sales Dashboard

- Sales concentrated in specific categories and products
  -Recommendation: Boost marketing of higher-profitability products

- Significant variation in branch performance
  - Recommendation: Support underperforming branches with promotions or additional inventory

Inventory Dashboard

- High inventory in slow-moving categories.
  - Recommendation: Reduce reordering for these categories.

- Low inventory turnover.
  - Recommendation: Improve reordering policies and align them with actual demand.

Conclusion & Future Work

6.1 Summary of Findings

This project provided a comprehensive solution for automating and improving sales and inventory management at Abu Zahra Electronics Company. It utilized the Odoo ERP system and integrated it with the n8n tool for automation and integration, along with Power BI for data analysis and interactive dashboards. The system unified operational data across different branches, automatically updated inventory, and reduced reliance on manual processes that previously caused delays and errors.

The analytical dashboards demonstrated the system's ability to provide a comprehensive view of sales and inventory performance through key performance indicators (KPIs). These KPIs helped management understand demand trends, evaluate branch performance, and improve resource management. Testing and evaluation results confirmed that the proposed solution achieved the project objectives of improving operational efficiency and supporting data-driven decision-making, thereby enhancing the company's competitiveness and sustainability.

6.3 Future Work

This project can be further developed in the future by expanding its scope to include additional functions that support the company's comprehensive digital transformation. Key areas for future development include:

- **Integrating the system with an e-commerce platform** to directly link online sales with the ERP system and analytics dashboards.

- **Adding a specialized dashboard** for managing procurement and suppliers and analyzing their performance.

- **Greater automation of decision-making processes**, such as automatic reordering based on predictive models.

- **Utilizing predictive analytics and artificial intelligence** technologies to forecast demand and improve future planning.

- **Enhancing the alert system** to include multiple channels, such as mobile applications or instant messaging.

References

Kimball, R., & Ross, M. (2013). *The Data Warehouse Toolkit*. Wiley.

Watson, H. J., & Wixom, B. H. (2007). *The Current State of Business Intelligence*. Computer.

Badwan, N. (2024). Role of supply chain partnership and IT integration on competitive advantage: Evidence from Palestine. *The TQM Journal*.

Palestinian Central Bureau of Statistics. (2022). *ICT Business Survey*.