PHASE II — Business Process Modeling

Smart Inventory Optimization System by RUREBWAYIRE AMPOZE Ariella (27640)

1. Business Process Overview & Objective

The Smart Inventory Optimization System supports the **end-to-end lifecycle of inventory management**, from recording sales to automatically generating optimized reorder requests. The objective is to ensure accurate stock tracking, prevent stockouts, reduce overstocking, and support managerial decision-making. The process starts with a customer purchase and ends when the system updates inventory after supplier delivery.

2. Key Entities, Actors & Responsibilities

Actors / Departments:
- **Sales Staff** – Record daily sales transactions into the system.
- **Inventory Management System**– Updates stock, performs demand prediction, checks against reorder thresholds, logs inventory movements, and auto-generates reorder requests.
- **Inventory Manager** – Reviews reorder requests and approves or rejects supplier orders.
- **Supplier** – Receives purchase orders and supplies goods.

System Data Sources:
- **Sales Records** – Provide demand data and stock movement history.
- **Product Master Data** – Contains stock levels, categories, suppliers, and pricing.
- **Supplier Records** – Store supplier contact and delivery details.
- **Inventory Logs** – Historical adjustments and audit trail for analytics.

3. Process Flow Description

1. **Start Event** – Customer purchases product(s).
2. **Sales Staff records sale** in the system.
3. The **Inventory System updates stock levels** and generates an inventory log entry.
4. **Decision Gateway:** MIS checks if available stock is below the dynamic reorder level (calculated from sales trends).
    - **If No:** Process ends.
    - **If Yes:** MIS **generates a reorder request** with an optimized reorder quantity.
5. **Inventory Manager reviews** the reorder request.
6. **Decision Gateway:** Approve purchase order?
    - **If No:** Process ends.
    - **If Yes:** Purchase order is **sent to the supplier**.
7. **Supplier delivers goods** and confirms delivery.
8. **Inventory System updates inventory**, logs restock action, and process ends.

4. MIS Relevance & Organisational Impact

The process is highly MIS-driven because it relies on automated stock monitoring, predictive analytics, and structured decision support. MIS improves accuracy, reduces manual workload, enhances supplier tracking, and ensures timely replenishment. Organisational impact includes reduced losses from stockouts, lower storage costs, improved customer satisfaction, and stronger procurement reliability, all resulting from integrated and well-coordinated information flows.

5. Analytics & BI Opportunities

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