Departments and Modules

Inventory Department

- Parts Inventory Management Module
  - Parts (part_id, name, supplier, price, quantity, received_date)
- Finished Products Inventory Management Module
  - Products (product_id, name, category, price, quantity)

Purchasing Department

- Supplier Management Module
  - Suppliers (supplier_id, name, contact_info)
- Parts Purchase Orders Module
  - PurchaseOrders (order_id, part_id, supplier_id, quantity, order_date, expected_delivery_date)

Sales Department

- Customer Orders Management Module
  - CustomerOrders (order_id, customer_id, product_id, quantity, order_date, delivery_deadline)
- Customer Management Module
  - Customers (customer_id, name, contact_info)

Production Department

- Production Scheduling Module
  - ProductionSchedule (schedule_id, product_id, start_date, end_date, quantity)
- Production Line Management Module
  - ProductionLine (line_id, product_id, status, start_date, end_date)

Finance Department

- Cost Management Module
  - Costs (cost_id, part_id, product_id, cost_type, amount, date)
- Final Product Pricing Module
  - Pricing (pricing_id, product_id, base_price, markup_percentage, final_price)

Interdepartmental and Module Connections

Inventory and Production: Parts inventory is transferred from the Inventory Department to the Production Department. Parts inventory is used for production scheduling and production line management.

Inventory and Sales: Finished products inventory is used to fulfill customer orders from the Inventory Department.

Purchasing and Inventory: Parts purchase orders are added to the parts inventory in the Inventory Department upon receipt.

Sales and Production: Customer orders are sent to production scheduling and the production line to produce the required products.

Finance and All Departments: Cost management and final product pricing are conducted based on the information provided by all departments.

Entity Relationships:

1. Suppliers (1) <--> (M) Parts
2. Suppliers (1) <--> (M) PurchaseOrders
3. Parts (1) <--> (M) PurchaseOrders
4. Parts (1) <--> (M) ProductionLine
5. Products (1) <--> (M) CustomerOrders
6. Customers (1) <--> (M) CustomerOrders
7. Products (1) <--> (M) ProductionSchedule
8. Products (1) <--> (M) ProductionLine
9. Products (1) <--> (1) Pricing
10. Parts (1) <--> (M) Costs
11. Products (1) <--> (M) Costs

Flows and Possible Operations in Departments

Inventory Department

1) Parts Inventory Management:
   a) Add new parts to inventory
   b) Update parts inventory
   c) Remove parts from inventory

2) Finished Products Inventory Management:

    a) Add finished products to inventory

    b) Update product inventory

    c) Remove products from inventory

Purchasing Department

1) Supplier Management:

    a) Add new supplier

    b) Update supplier information

    c) Remove supplier

2) Parts Purchase Orders:

    a) Create new purchase order

    b) Update purchase order

    c) Track purchase order status

Sales Department

1) Customer Orders Management:

    a) Create new order

    b) Update order

    c) Track order status

2) Customer Management:

    3) Add new customer

    4) Update customer information

    5) Remove customer

Production Department

1) Production Scheduling:

    a) Create new production schedule

    b) Update production schedule

    c) Track production status

2) Production Line Management:

    a) Start product production

    b) Monitor production line status

    c) Complete product production

Finance Department

1) Cost Management:
   a) Record costs related to parts and products
   b) Calculate final costs

2) Final Product Pricing:
   a) Set base product prices
   b) Add profit margin percentage
   c) Calculate final prices