COLLEGE CODE : 3126

COLLEGE NAME: THANGAVELU ENGINEERING COLLEGE

DEPARTMENT : CSE

STUDENT NM-ID: 73bc0593c26fddba0094794fd03234f9

ROLL NO : 312623104701

DATE : 16-05-2025

TECHNOLOGY : AI

PROJECT NAME: SUPPLY CHAIN MANAGEMENT

SUBMITTED BY,

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Archana R

Sujith B

Phase 5: Project Demonstration & Documentation

Title: AI-EBPL-SUPPLY CHAIN MANAGEMENT

Abstract:

This project focuses on analyzing and enhancing core supply chain operations through the application of established management principles and methodologies. In its final phase, the project demonstrates improved processes, documents best practices, and outlines resulting performance enhancements. This document provides a comprehensive report of the project's completion, covering the process demonstration, procedural documentation, performance metrics, and recommendations for ongoing management. The project emphasizes optimizing the flow of goods, information, and finances across the supply chain network. Process diagrams, workflow charts, and performance analysis reports are included to detail the enhancements.

1. Project Demonstration

Overview:

The enhanced supply chain processes will be demonstrated to stakeholders, showcasing improvements in efficiency, coordination, and overall management effectiveness. This demonstration highlights the optimized flow of materials, information, and funds, along with improved collaboration among supply chain partners.

Demonstration Details:

- ***Process Walkthrough**: A live walkthrough of key supply chain processes (e.g., procurement, inventory control, order fulfillment), demonstrating the changes and improvements implemented.*
- ***Decision-Making Scenarios**: Demonstration of how management decisions are made within the enhanced supply chain framework, including inventory level adjustments, supplier selection, and logistics planning.*
- ***Information Flow**: Visualization of how information flows through the supply chain, illustrating improvements in visibility and responsiveness.*
- ***Performance Metrics**: Presentation of key performance indicators (KPIs) such as order cycle time, inventory turnover, and on-time delivery rates, highlighting the improvements achieved through enhanced management.*
- ***Collaboration & Coordination:** Demonstration of how collaboration and coordination have been improved among different entities in the supply chain (e.g., suppliers, manufacturers, distributors) through effective management practices.*

Outcome:

By the end of the demonstration, stakeholders will understand the enhanced supply chain processes, the improvements in efficiency and effectiveness, and the impact of strengthened management practices.

2. Project Documentation

Overview:

Comprehensive documentation of the enhanced supply chain processes and management procedures is provided. This includes process maps, standard operating procedures (SOPs), and guidelines for decision-making and control.

Documentation Sections:

- ***Process Maps**: Visual representations of the enhanced supply chain processes, illustrating the sequence of activities, decision points, and information flows.*
- ***Standard Operating Procedures (SOPs):** Detailed written instructions for carrying out specific supply chain activities (e.g., warehouse operations, transportation management, quality control).*
- ***Decision-Making Guidelines**: Frameworks and guidelines to support effective decision-making in various supply chain scenarios (e.g., risk management, capacity planning, demand forecasting).*
- ***Performance Measurement Procedures**: Documentation of how key performance indicators (KPIs) are measured, tracked, and reported to facilitate ongoing management and control.*
- ***Training Materials**: Materials for training personnel on the enhanced supply chain processes and procedures, ensuring effective implementation and management.*

Outcome:

Clear and comprehensive documentation will ensure consistent execution of supply chain activities, facilitate knowledge transfer, and support ongoing process improvement and management effectiveness.

3. Feedback and Final Adjustments

Overview:

Feedback on the enhanced supply chain processes and documentation will be gathered from stakeholders and process owners. This feedback will be used to make final refinements and ensure alignment with organizational goals and management objectives.

Steps:

- ***Feedback Collection**: Feedback will be gathered through surveys, interviews, and workshops with stakeholders and process owners to assess the effectiveness of the enhanced processes and management procedures.*
- ***Refinement**: Based on the feedback, processes and documentation will be adjusted to address any identified issues, inconsistencies, or areas for further improvement in management practices.*
- ***Validation**: The refined processes will be validated to ensure they meet the project objectives and stakeholder requirements, and support effective supply chain management.*

Outcome:

Final adjustments will ensure the enhanced supply chain processes are robust, effective, and well-supported by stakeholders and management, leading to improved supply chain performance.

4. Final Project Report Submission

Overview:

The final project report provides a comprehensive summary of the Supply Chain Management enhancement project, including key achievements, challenges faced, and outcomes. This report includes performance data, process analysis, and recommendations for future initiatives in supply chain management.

Report Sections:

- ***Executive Summary**: A concise overview of the project, its objectives, and key achievements in enhancing supply chain management.*
- ***Project Phases**: A detailed breakdown of each project phase, including activities, deliverables, and milestones related to supply chain process improvement.*
- ***Process Analysis**: Analysis of the existing supply chain processes, the identified areas for improvement, and the rationale for the changes implemented to enhance management effectiveness.*
- ***Performance Results**: Presentation of the performance improvements achieved through enhanced supply chain management, supported by data and analysis.*
- ***Recommendations**: Recommendations for ongoing supply chain management, including continuous improvement*

initiatives and future projects to further optimize the supply chain.

***Outcome**:*

A comprehensive project report will provide a clear record of the project and its outcomes, supporting future supply chain management efforts and strategic decision-making.

5. Project Handover and Future Initiatives

***Overview**:*

The project's conclusion and transition to ongoing supply chain management and continuous improvement.

***Handover Details**:*

- ***Transition Plan**: A plan for transitioning the enhanced supply chain processes and documentation to the relevant operational teams, ensuring a smooth handover of management responsibilities.*
- ***Future Initiatives**: Recommendations for future supply chain initiatives, such as further process optimization, technology adoption to support management, or strategic partnerships to enhance overall supply chain management.*

***Outcome**:*

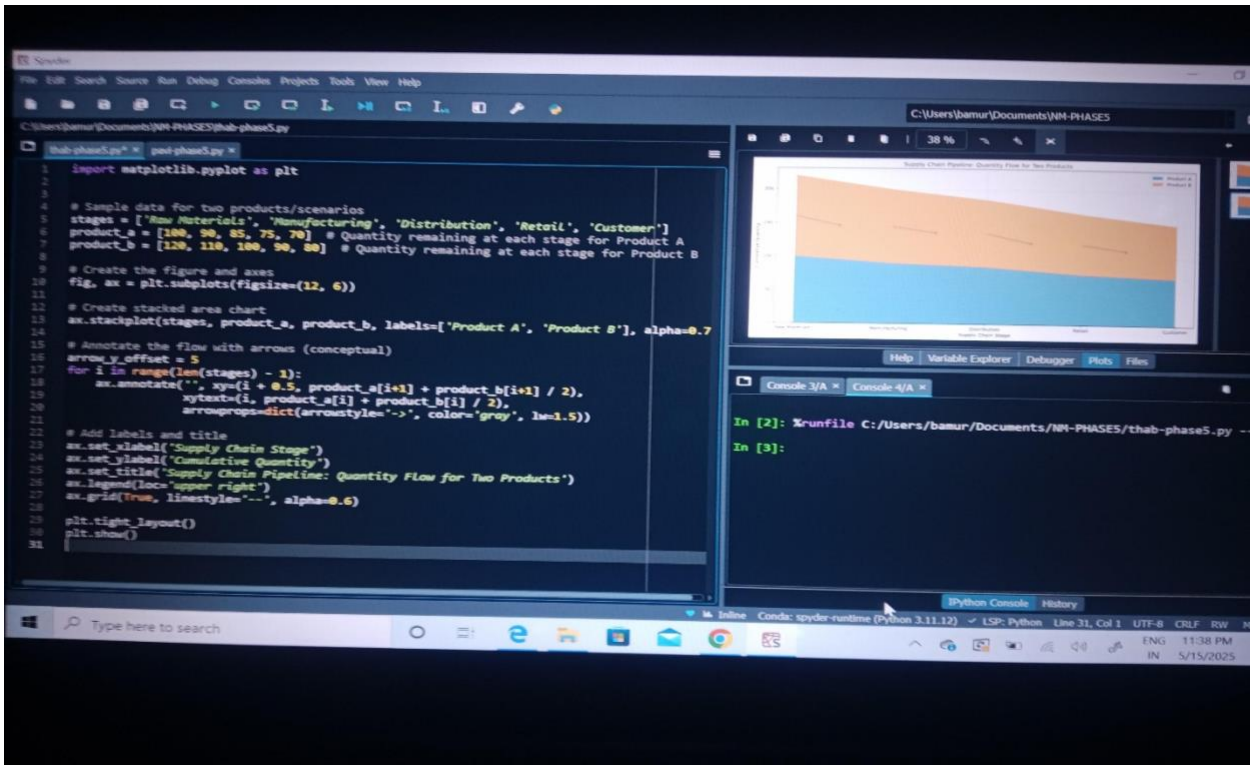
A smooth transition to ongoing operations and a clear roadmap for future supply chain improvements and management effectiveness.

SOURCE CODE FOR PHASE-5:

```
Import matplotlib.pyplot as plt


# Sample data for two products/scenarios

Stages = [‘Raw Materials’, ‘Manufacturing’, ‘Distribution’, ‘Retail’, ‘Customer’]

Product_a = [100, 90, 85, 75, 70]  # Quantity remaining at each stage for Product A

Product_b = [120, 110, 100, 90, 80]  # Quantity remaining at each stage for Product B


# Create the figure and axes

Fig, ax = plt.subplots(figsize=(12, 6))


# Create stacked area chart

Ax.stackplot(stages, product_a, product_b, labels=[‘Product A’, ‘Product B’], alpha=0.7)


# Annotate the flow with arrows (conceptual)

Arrow_y_offset = 5

For I in range(len(stages) – 1):

   Ax.annotate(‘’, xy=(I + 0.5, product_a[i+1] + product_b[i+1] / 2),
```

```
            Xytext=(l, product_a[i] + product_b[i] / 2),
            Arrowprops=dict(arrowstyle='->', color='gray',
lw=1.5))

# Add labels and title
Ax.set_xlabel('Supply Chain Stage')
Ax.set_ylabel('Cumulative Quantity')
Ax.set_title('Supply Chain Pipeline: Quantity Flow for Two
Products')
Ax.legend(loc='upper right')
Ax.grid(True, linestyle='—', alpha=0.6)

Plt.tight_layout()
Plt.show()
```

SCREENSHOT FOR PHASE-5 OUTPUT: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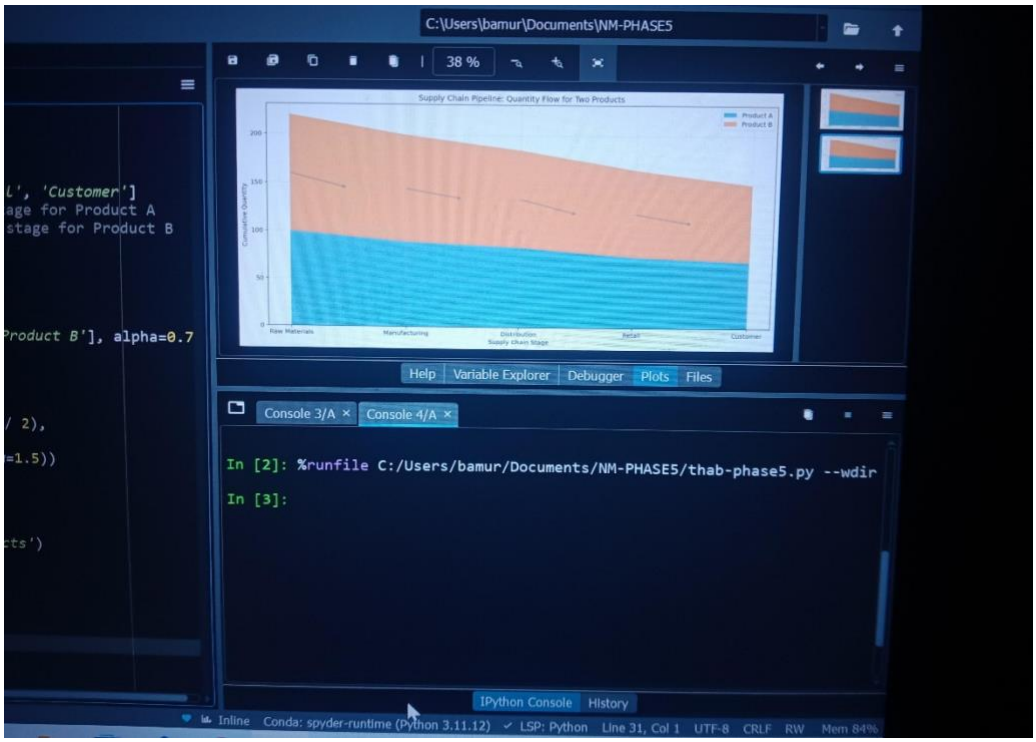
for i in range(len(stages) - 1):
ax.annotate('', xy=(i + 0.5, product_a[i+1] + product_b[i+1] / 2),
xytext=(i, product_a[i] + product_b[i] / 2),
arrowprops=dict(arrowstyle='->', color='gray', lw=1.5))
# Add labels and title
ax.set_xlabel('Supply Chain Stage')
ax.set_ylabel('Cumulative Quantity')
ax.set_title('Supply Chain Pipeline: Quantity Flow for Two Products')
ax.legend(loc='upper right')
ax.grid(True, linestyle='--', alpha=0.6)
plt.tight_layout()
plt.show()
C:\Users\bamur\Documents\NM-PHASE5
38 %
Help
Variable Explorer
Debugger
Plots
Files
Console 3/A
Console 4/A
In [2]: %runfile C:/Users/bamur/Documents/NM-PHASE5/thab-phase5.py --
In [3]:
IPython Console
History
Type here to search


C:\Users\bamur\Documents\NM-PHASE5
38 %
Supply Chain Pipeline: Quantity Flow for Two Products
Product A
Product B
Help
Variable Explorer
Debugger
Plots
Files
Console 3/A
Console 4/A
In [2]: %runfile C:/Users/bamur/Documents/NM-PHASE5/thab-phase5.py --wdir
In [3]:
IPython Console
History
Inline
Conda: spyder-runtime (Python 3.11.12)
LSP: Python
Line 31, Col 1
UTF-8
CRLF
RW
Mem 84%