A SINGLE-CASE STUDY USING LEE UNCERTAINTY MATRIX

INTERNATIONAL KMUTNB COLLEGE

A DYNAMIC INVENTORY STRATEGY FOR F&B IMPORTERS :
A CASE STUDY OF THE COMMERCIAL COMPANY OF SIAM

Thesis Code: 6801

Researcher:
Patamawadee Somphong

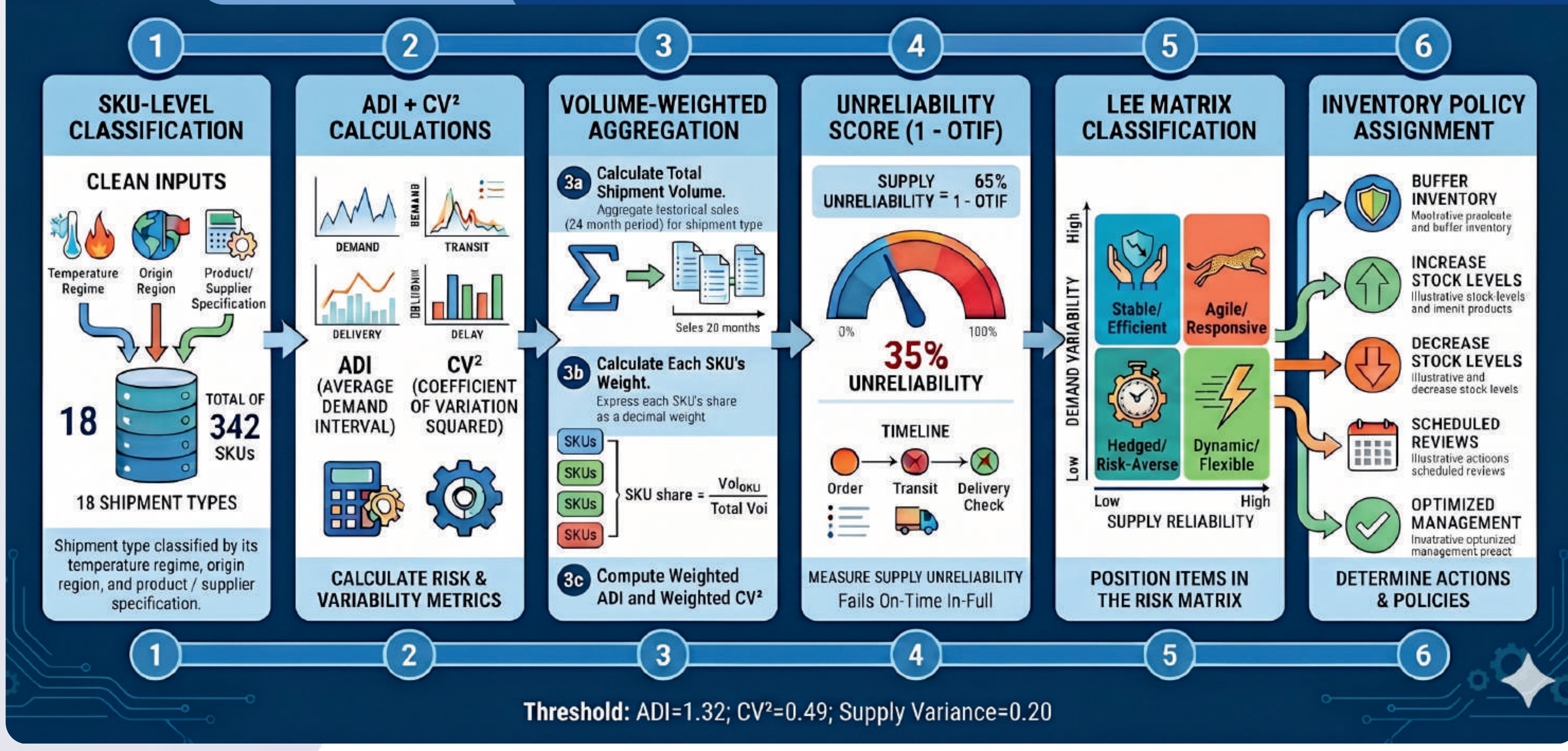
Advisors:
Mr. Martin Knutzen &
Mr. Sarat Pongprasert

Program:
B.B.A. International Trade and Business Logistics, International College, KMUTNB

01 RESEARCH OBJECTIVES

- To **evaluate inventory risk profiles** using historical demand and supply data
- To **classify 18 shipment types** into strategic risk quadrants
- To **design a dynamic inventory framework** matching policies to risk scenarios

02 RESEARCH METHODS



03 KEY FINDINGS

Route Classification

15 Efficient Routes	3 Volatile Routes
Low variability and **low** supply unreliability	**High** variability and **low** supply unreliability

High Supply Reliability:
All 18 shipment types scored an average OTIF > 91%, showing low supply unreliability.

Demand Volatility:
15 routes showed smooth, low-risk demand, while 3 routes (Dry USA, Frozen India, Frozen Netherlands) showed highly erratic demand.

Matrix Placement:
15 routes fall into Quadrant 1 (Efficient), and 3 routes fall into Quadrant 2 (Responsive).

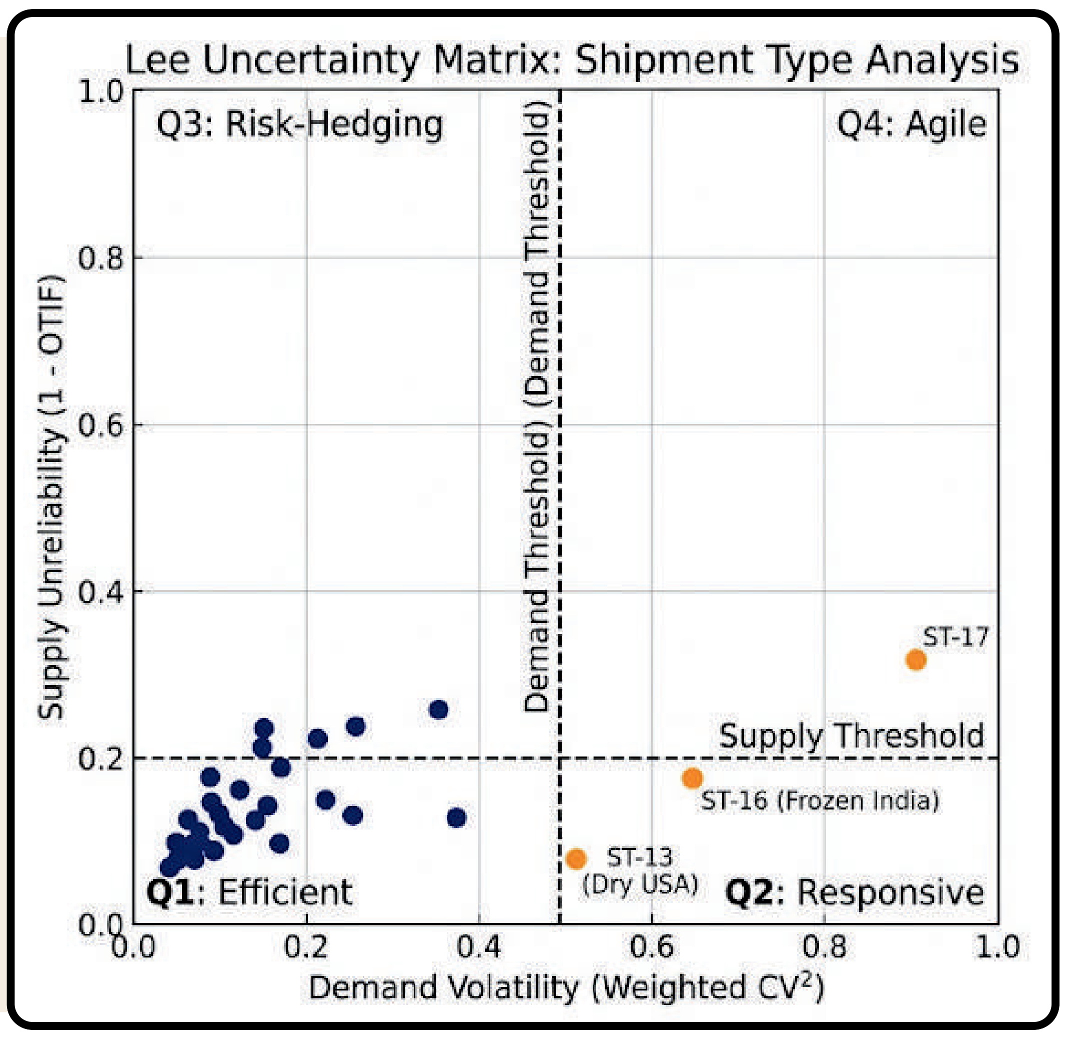
The Lee Uncertainty Matrix Summary:

Top Left (Q3 - Risk-Hedging):
0 Shipment Types (Low Demand / High Supply unreliability).

Top Right (Q4 - Agile):
0 Shipment Types (High Demand / High Supply unreliability).

Bottom Left (Q1 - Efficient):
15 Shipment Types (Low Demand / Low Supply unreliability).

Bottom Right (Q2 - Responsive):
3 Shipment Types (High Demand / Low Supply unreliability).



04 RECOMMENDATIONS

Immediate Lean Transition & Targeted Policy Adjustments

Quadrant 1 (15 Routes):
Apply lean, Economic Order Quantity (EOQ) replenishment with minimal safety stock.

Quadrant 2 (3 Erratic Routes):
Implement Continuous Review (s, Q) systems with elevated safety stock.

Root Cause Investigation

Review customer purchasing behaviors for Dry USA, Frozen India, and Frozen Netherlands to understand external drivers.

Strategic Risk Monitoring

Monitor qualitative factors, like geopolitical instability in Middle East transit routes, alongside quantitative data.

INSIGHT

Supply is Stable; Demand Drives the Risk —

Since suppliers consistently deliver on time (OTIF > 91%), holding extra inventory across the board ties up working capital and leads to spoiled products. Instead, the company only need to use safety stock to protect against unpredictable customer demand on erratic routes.