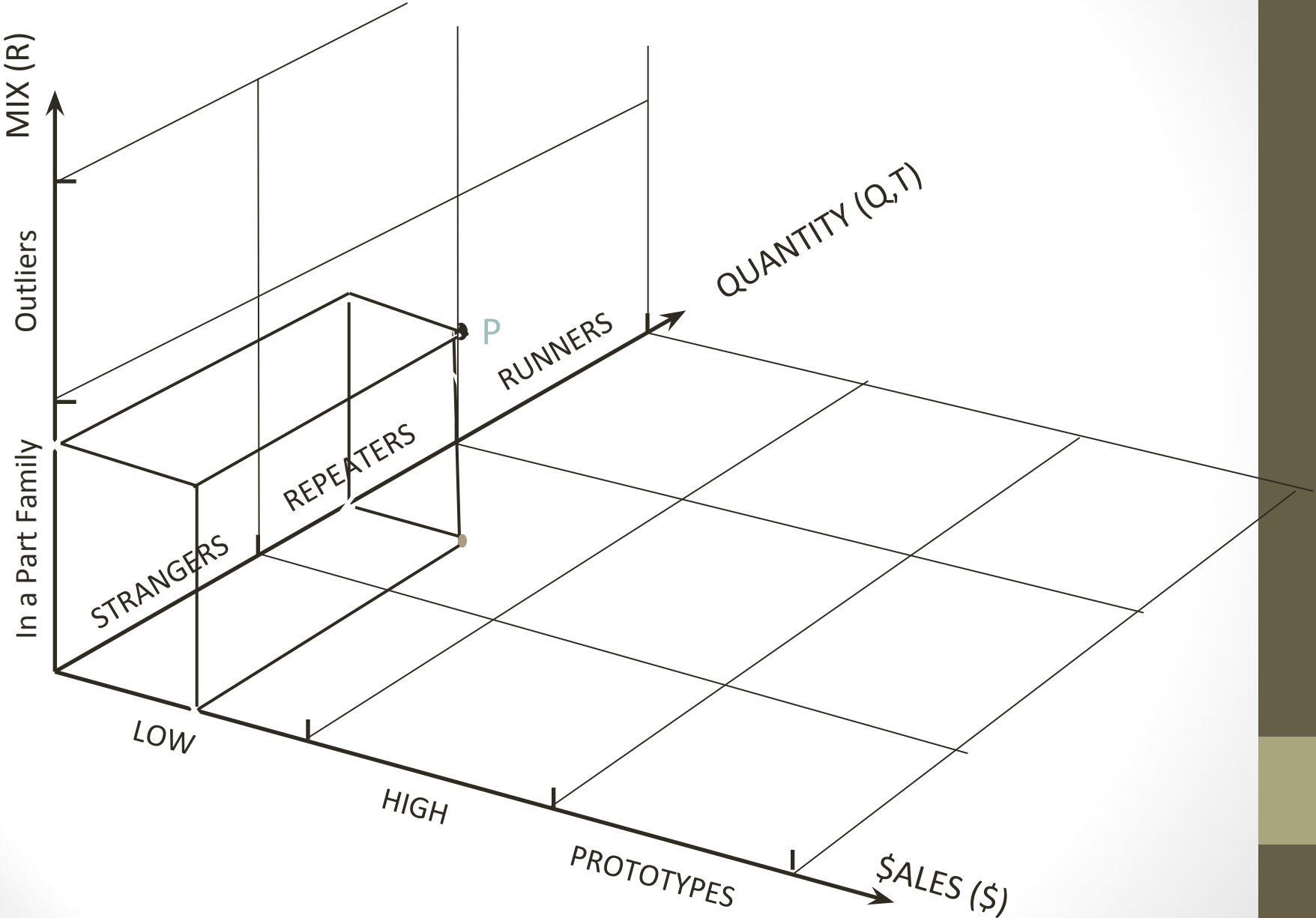


# Product Mix Segmentation

**What Is It?**

# Visualizing the Businesses in One Factory



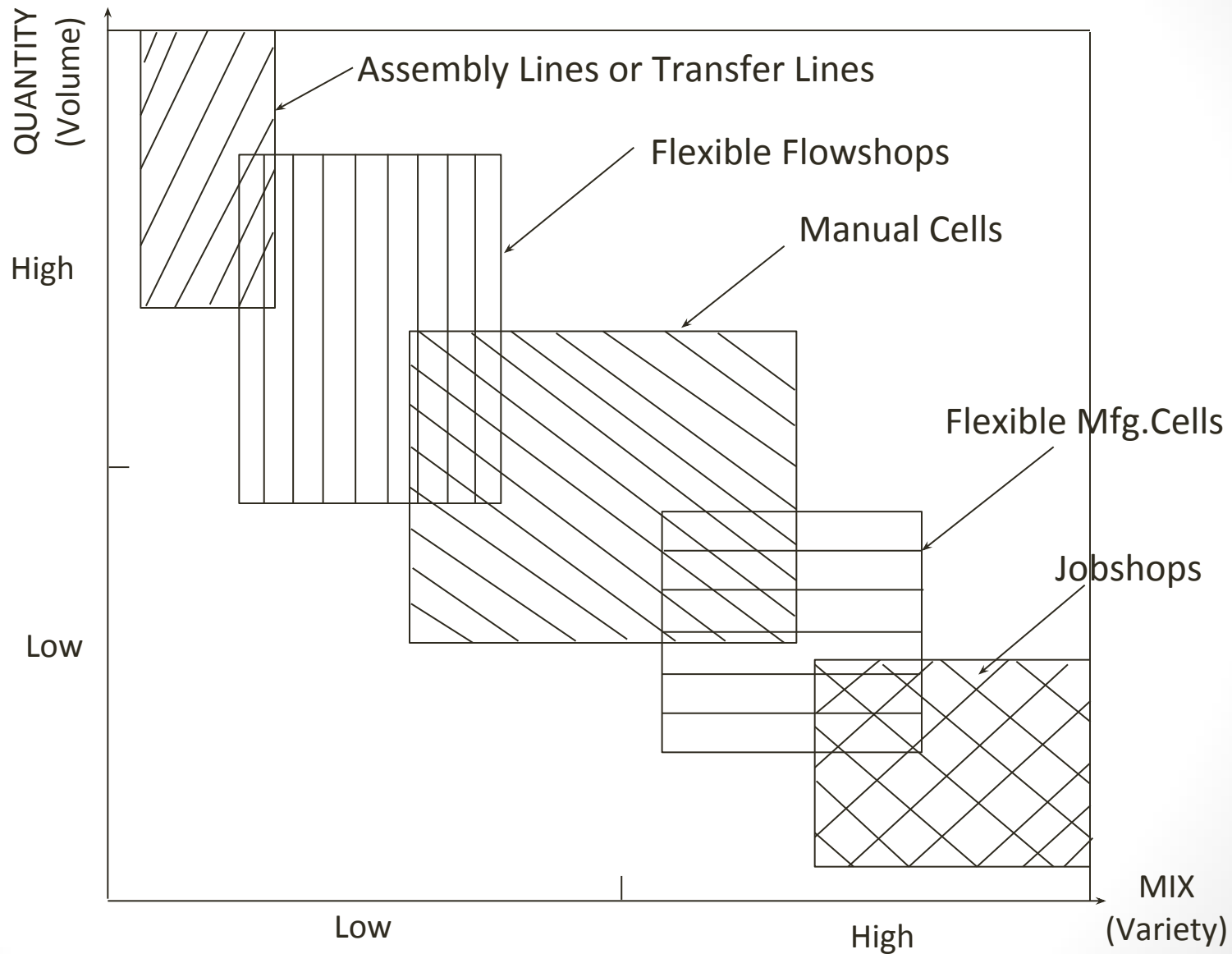
**Why Do It?**

# Many Lean Tools are Unsuitable for HMLV

- ✓ Strategic Planning
- ✓ Top-Down Leadership
- ✓ Empowered Workforce
- ✓ Cross-trained + Mobile Workforce
- ✓ 5S
- ✓ TPM
- ✓ Setup Reduction
- ✓ Error-Proofing
- ✓ Quality at Source
- ✓ Visual Workplace
- ✓ Right-sized Equipment
- ✓ Standardization of Work

- ✗ Right-sized Machines (= Inflexible)
- ✗ ERP/MRP-II/MRP (= Infinite Capacity)
- ✗ Visual (but Manual) Scheduling
- ✗ Value Stream Mapping
- ✗ One-Piece Flow Cells
- ✗ Product-specific Kanbans
- ✗ FIFO Sequencing of Orders
- ✗ Pacemaker Scheduling
- ✗ Inventory Supermarkets
- ✗ Scheduling using Takt Time
- ✗ Load Leveling
- ✗ Assembly Line Balancing

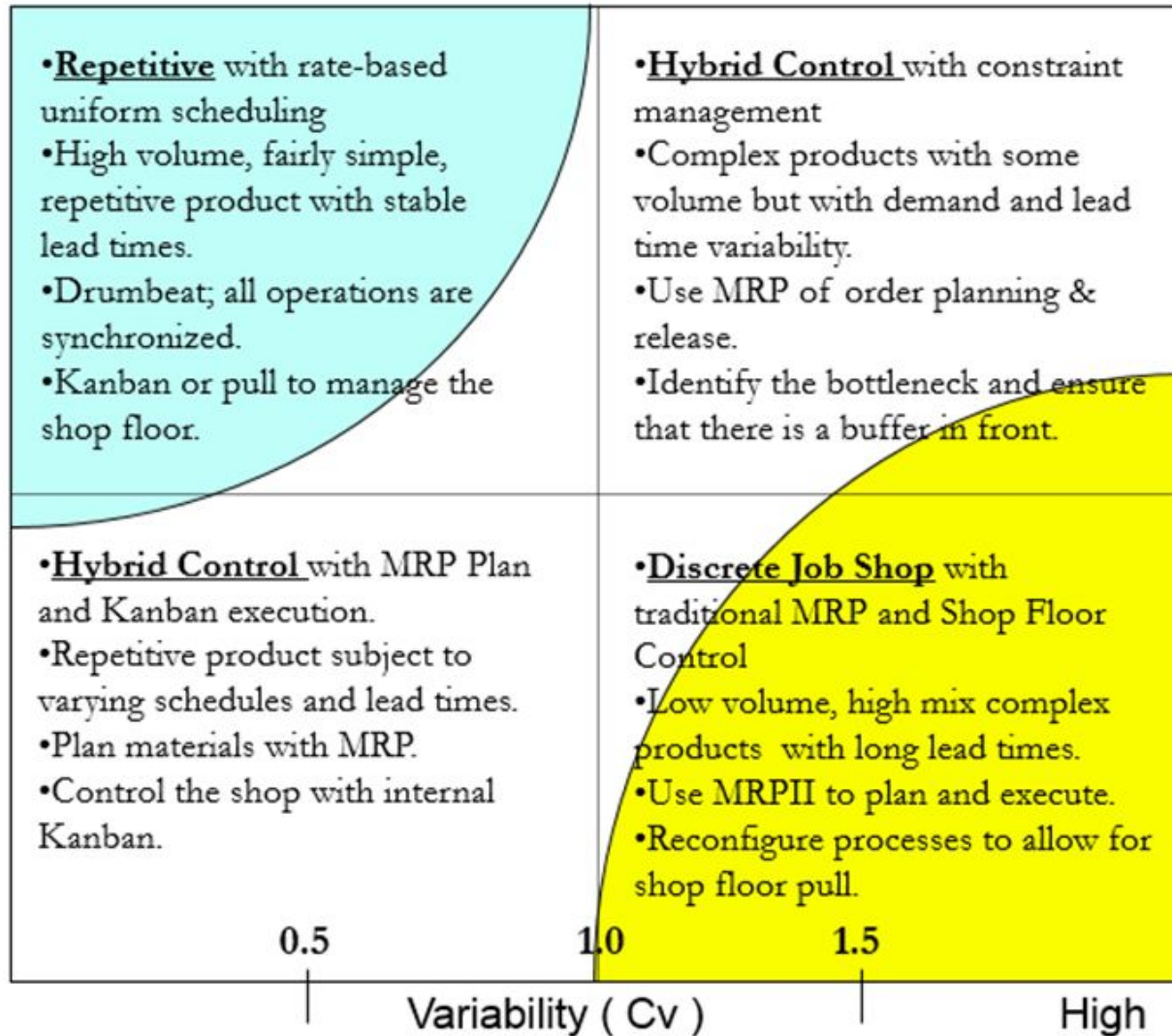
# How Flexible Is your Factory Layout?



# How Flexible Is Your Production Control?

High

V  
o  
l  
u  
m  
e



Low

- Which Lean tools are more important?
- What is the best physical layout?
- What production control system (Push vs. Pull) is best?
- How should the business system support this?
- Where should the “Lean” effort begin?

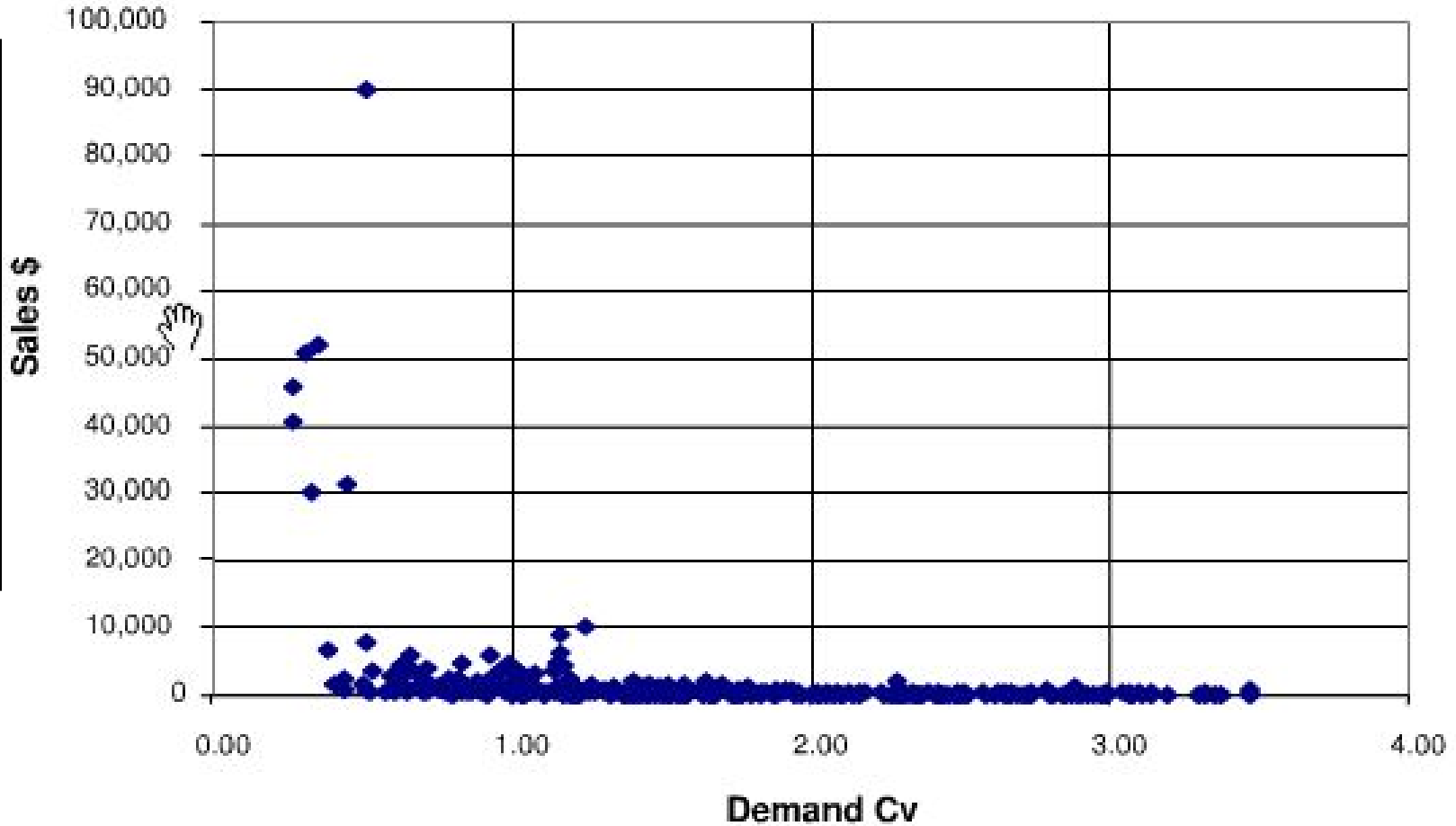
**How to Do It?**

# Data Requirements: P, Q, R, \$

Part #	Part Name	Prod. Qty.	Sales \$	Routings					
1	Slider (a)	40	\$10,000	6	9	10	11	12	
2	Slider (b)	45	\$25,000	4	6	9	10	11	12
3	Press Brace	80	\$50,000	5	8	9	10		
4	Bracket #1	15	\$5,000	4	7	9	10		
5	Table	100	\$30,000	3	7	10	12		
6	Damper	20	\$10,000	1	7	9	10		
7	Bracket #2	30	\$5,000	1	8	9	10		
8	Support	30	\$20,000	4	7	9			
9	Housing	70	\$40,000	2	7	9			
10	Flange	15	\$20,000	2	9				
11	Shaft	10	\$10,000	3	9	10	12		
12	Base	90	\$35,000	3	6	4	10	12	
13	Spacer	75	\$45,000	4	6	4	10	12	

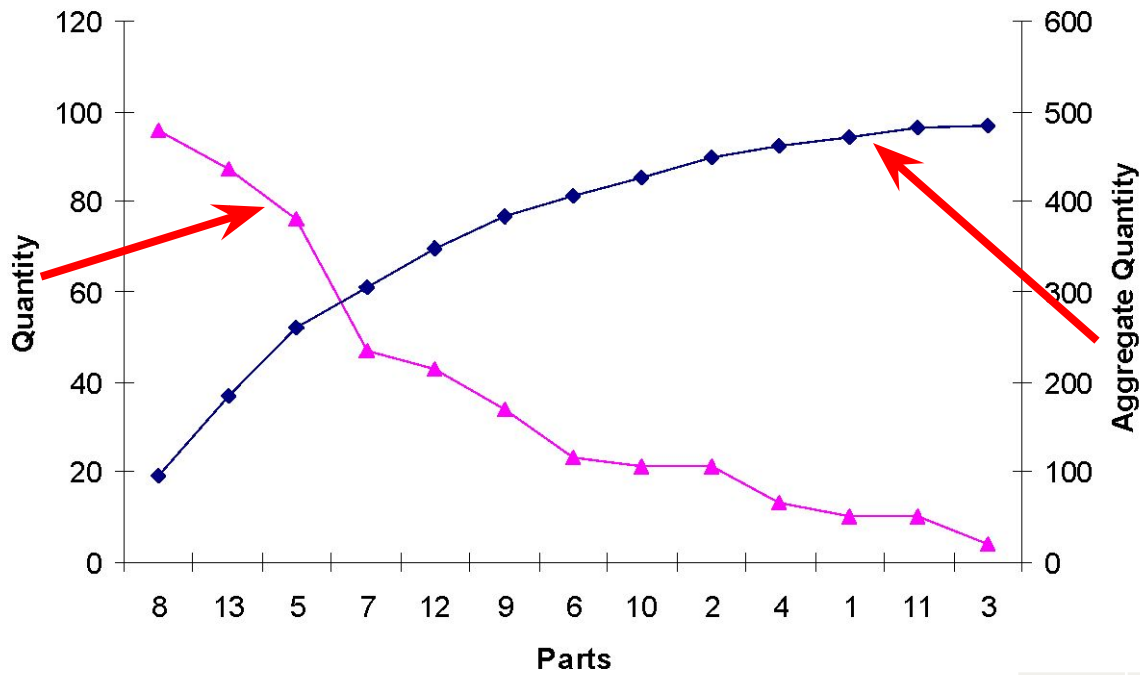
# Data Requirements (contd.): P, (Q, T), \$

This axis captures (\$)



This axis captures (Q, T)

# **PQ Analysis (aka ABC Analysis)**

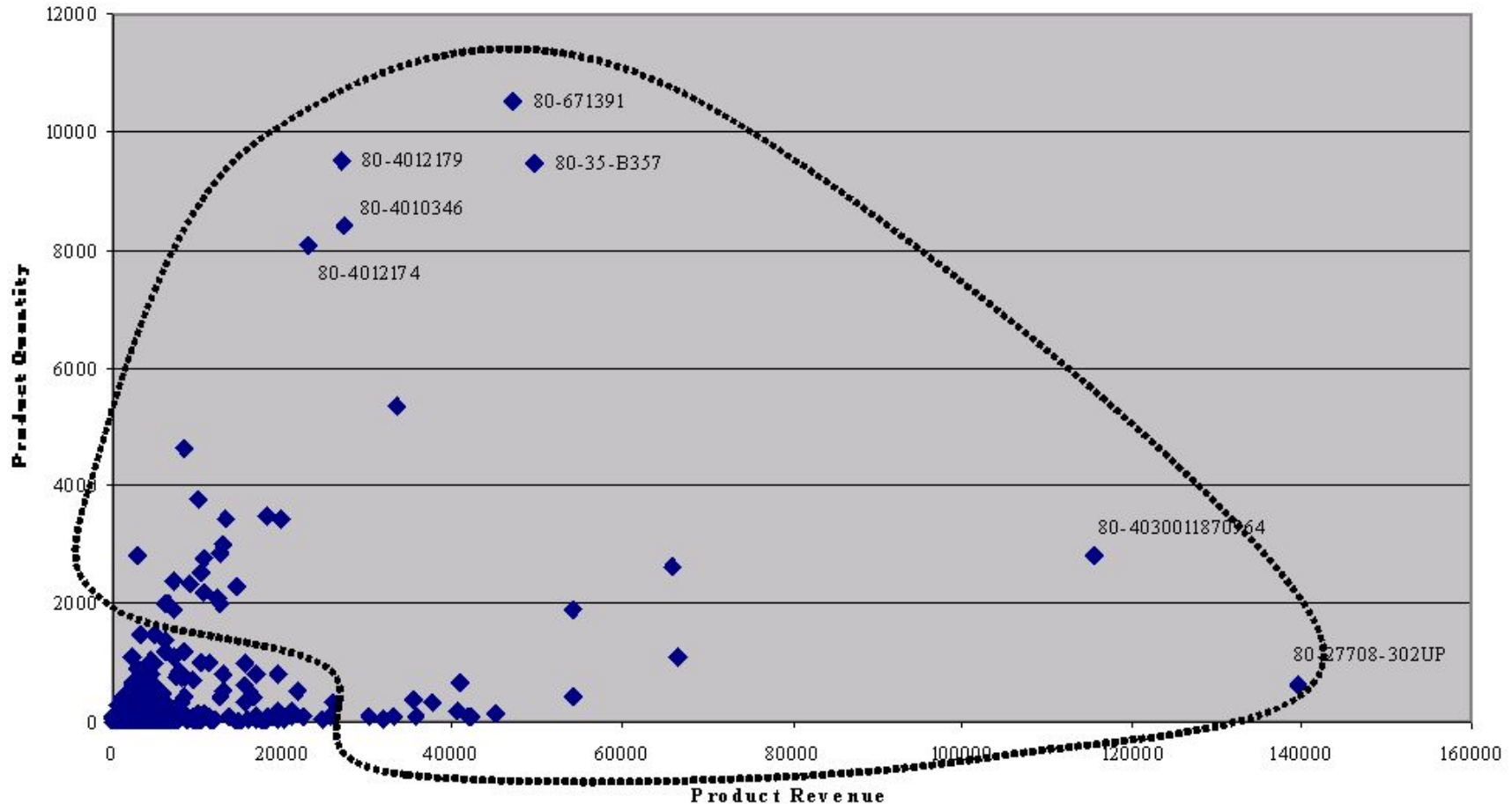


Part	Quantity	Agg. Qty	Agg. Qty %
8	96	96	19
13	87	183	37
7	47	306	63
12	43	349	72
<b>9</b>	<b>34</b>	<b>383</b>	<b>79</b>
<b>6</b>	<b>23</b>	<b>406</b>	<b>83</b>
10	21	427	88
2	21	448	92
4	13	461	95
1	10	471	97
11	10	481	99
3	4	485	100

# PQ\$ Analysis

## (PQ Analysis + P\$ Analysis)

# Sample of Parts selected by PQ\$ Analysis

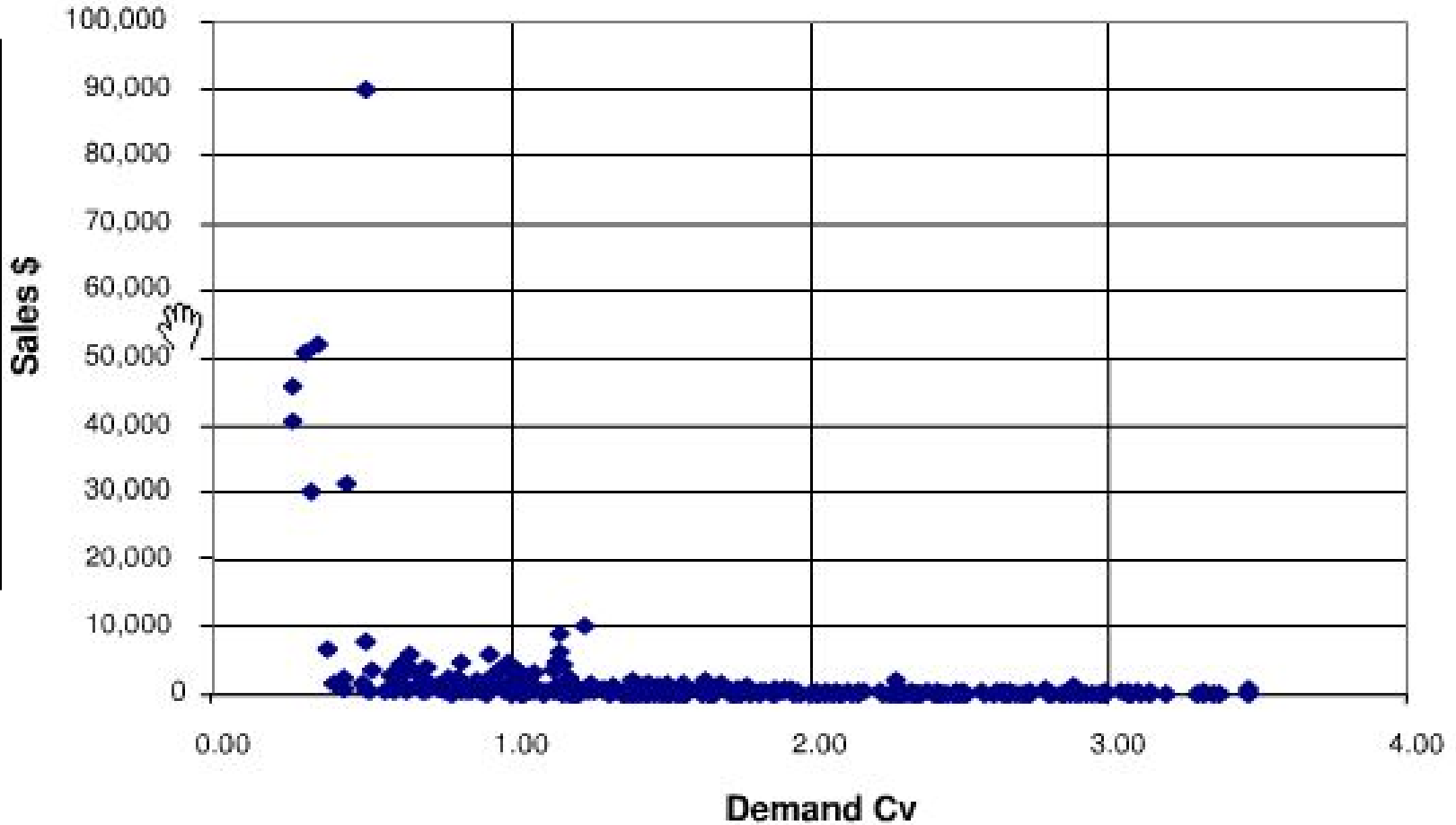


Entire Product Mix had 530 Active Parts

# PQT Analysis (Demand Segmentation)

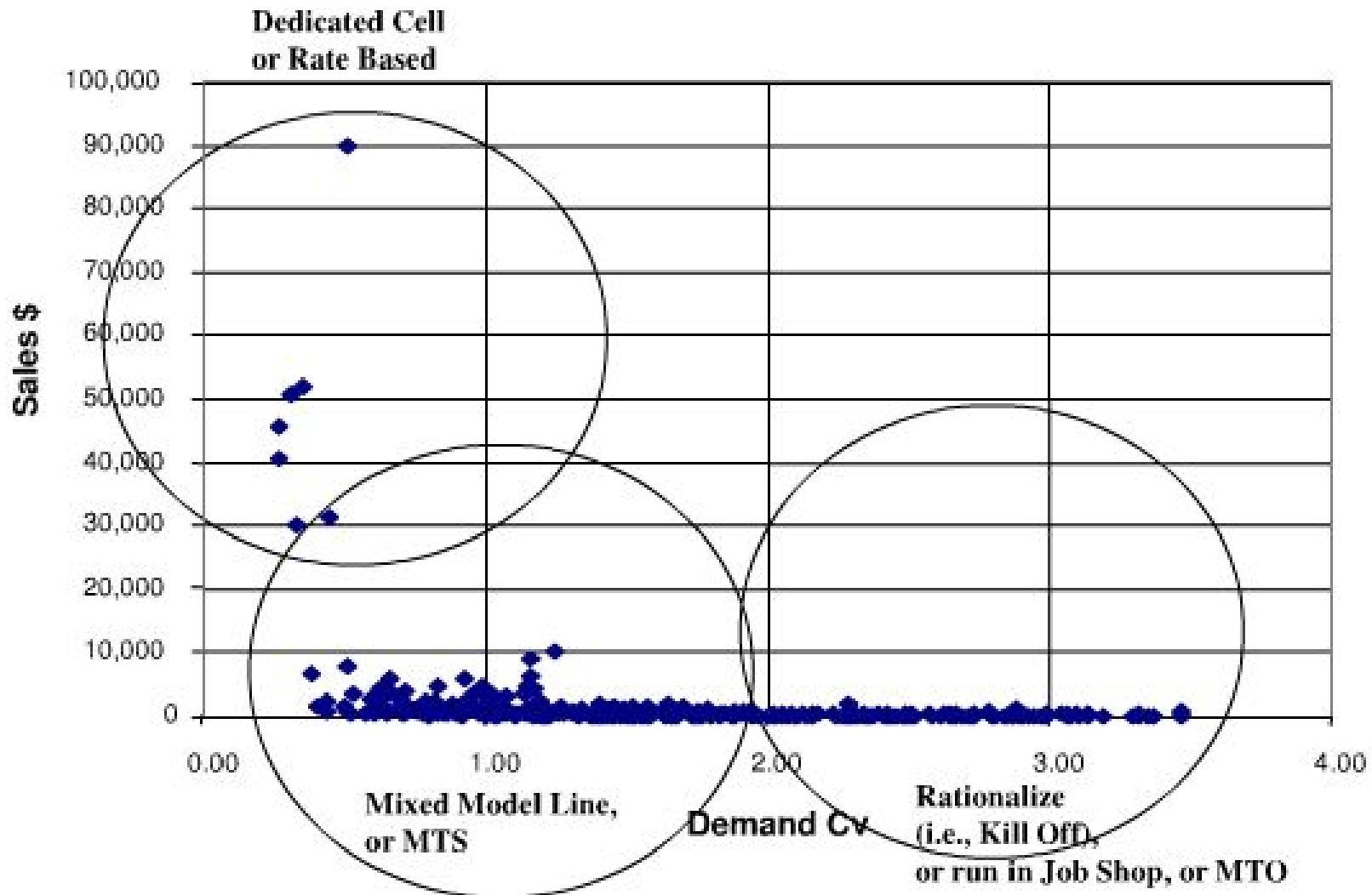
# Plot \$Sales on Y Axis vs. COV (Q) on X Axis

This axis captures (\$)



This axis captures (Q, T)

# Demand Segments = Factory Partitions



# PR Analysis

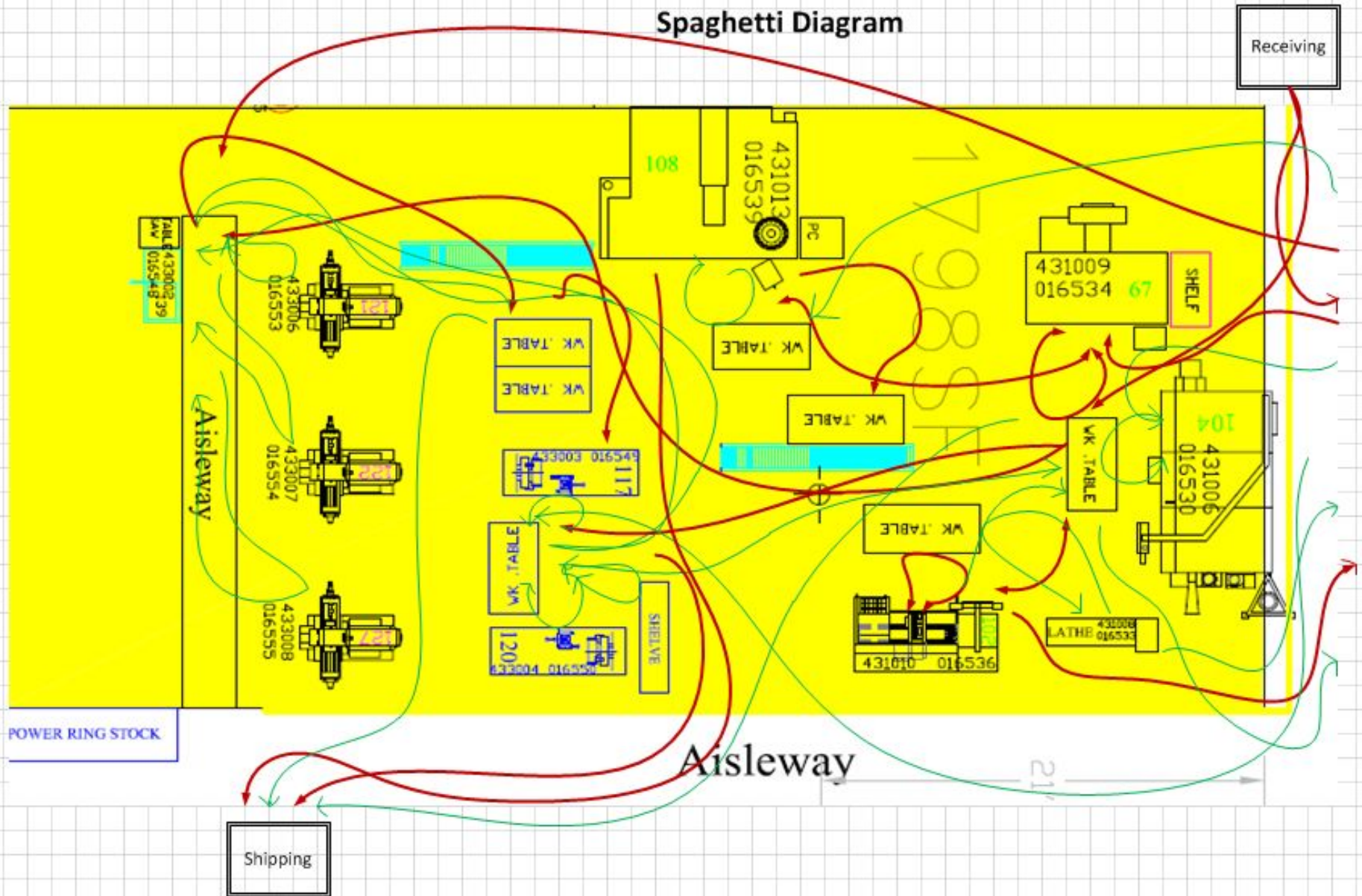
**(Product-Process Matrix Analysis)**



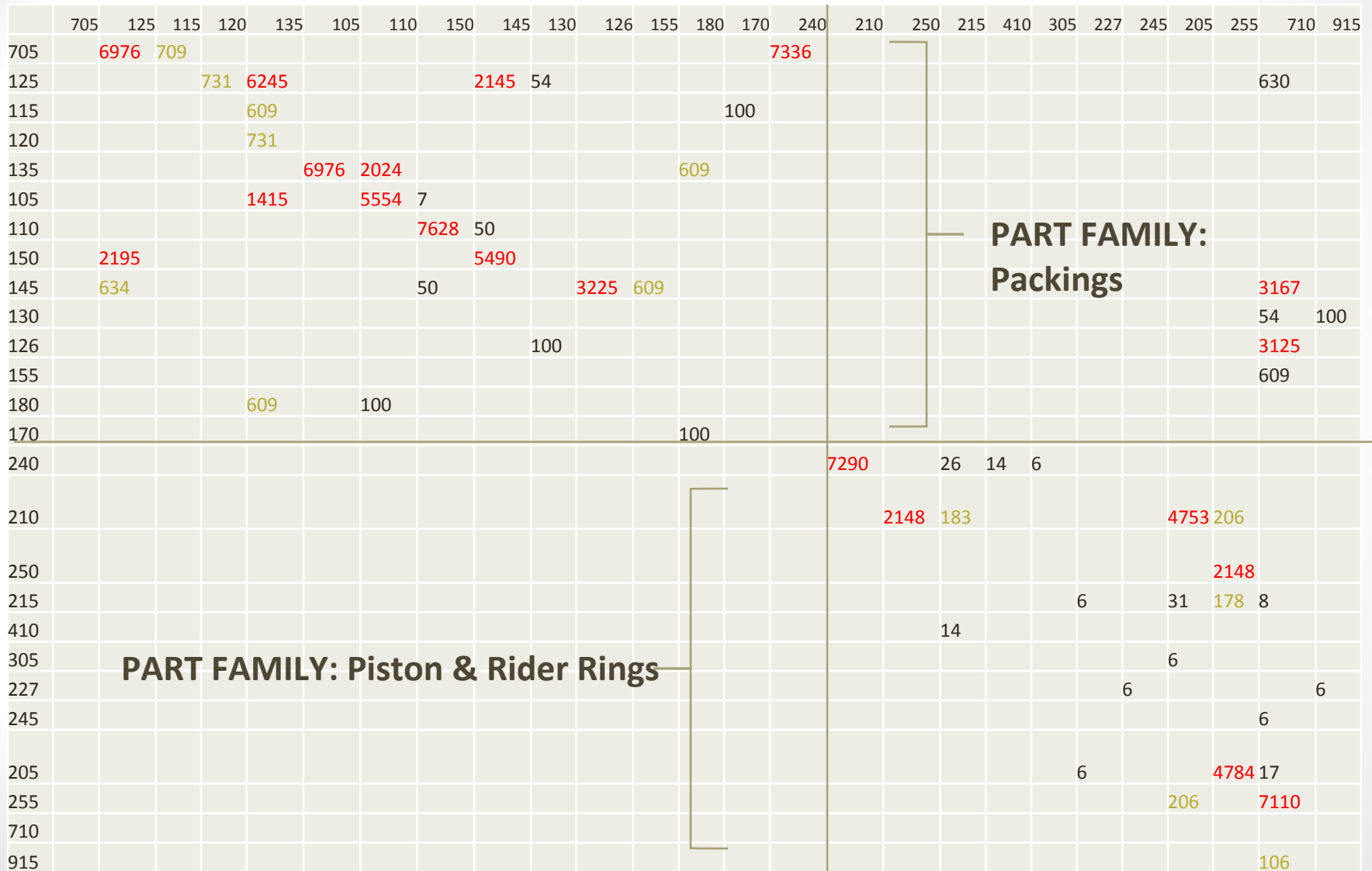
# **PQR Analysis**

## **(From-To Chart and Flow Diagram)**

# Flow Diagram (Current)



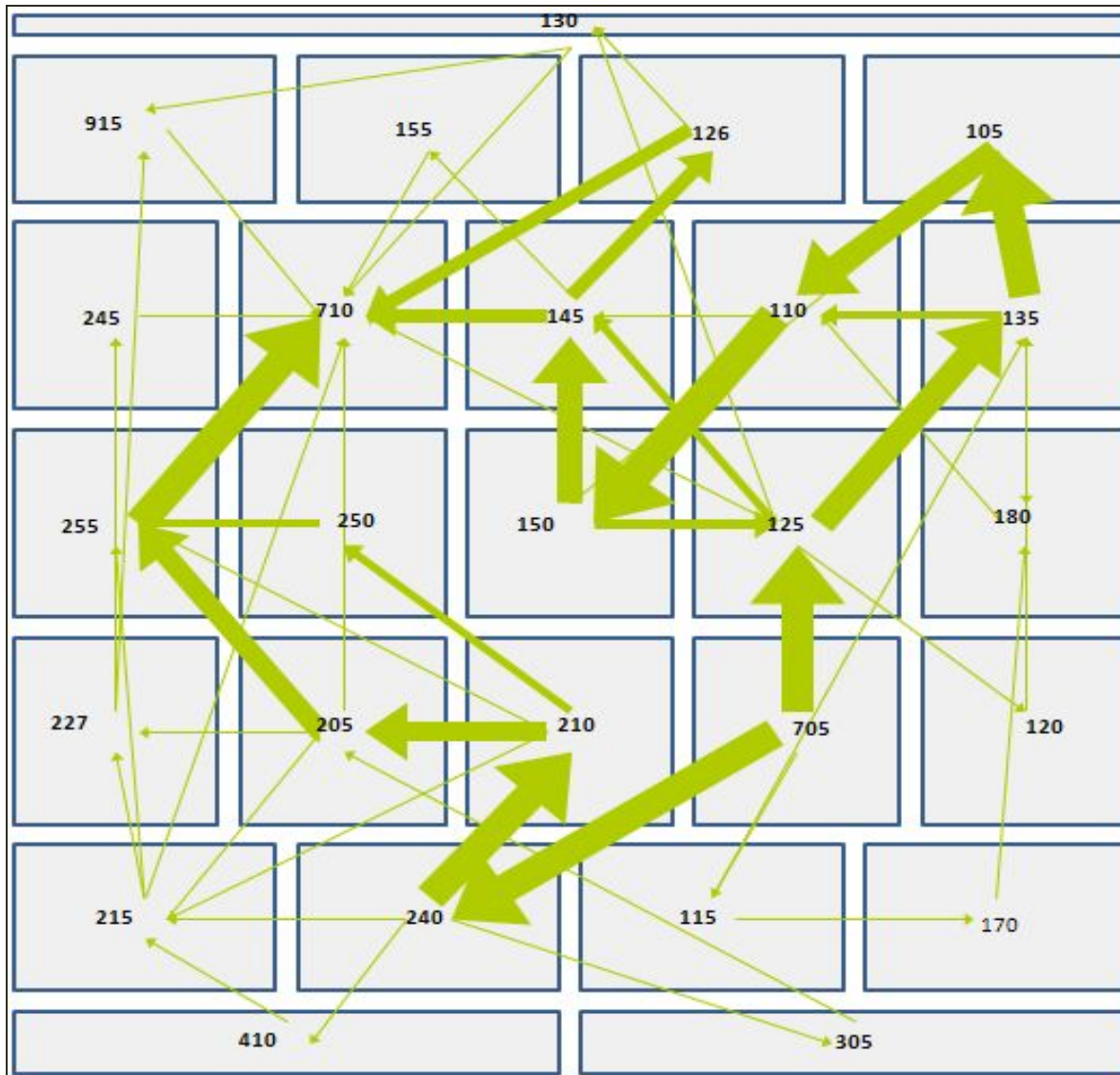
# From-To Chart (Spreadsheet)



**PART FAMILY:  
Packings**

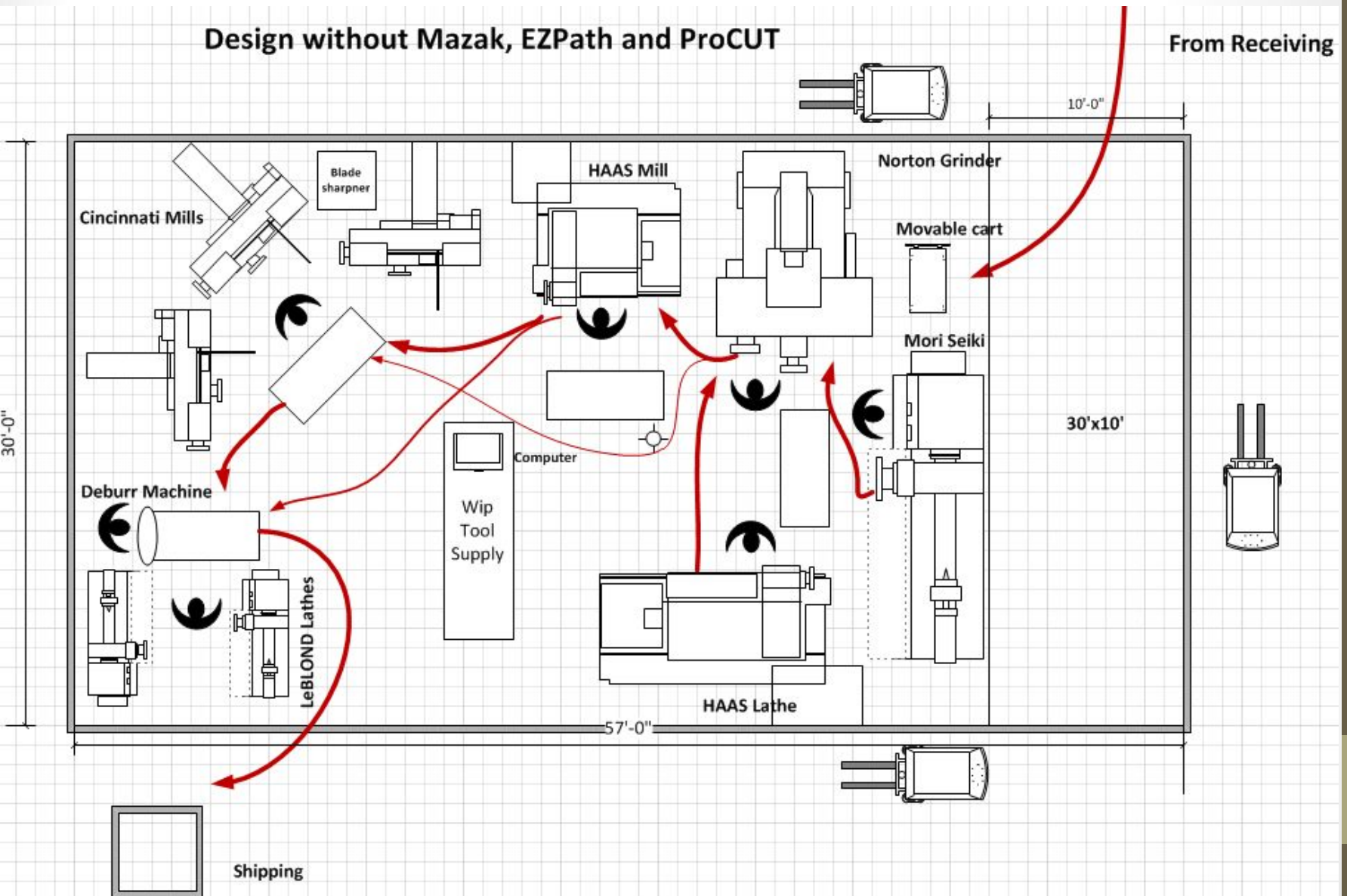
**PART FAMILY: Piston & Rider Rings**

# From-To Chart (Block Layout)



# Flow Diagram (Future)

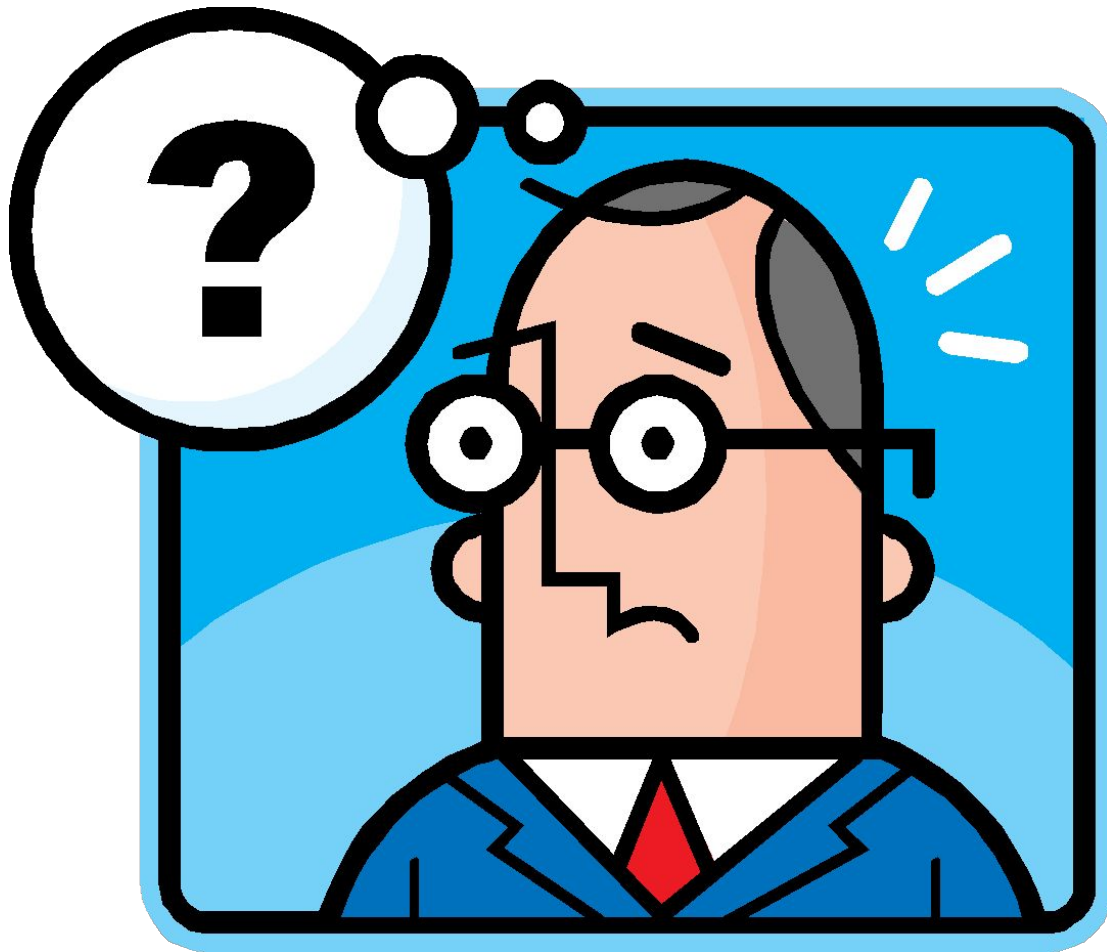
Design without Mazak, EZPath and ProCUT



# CASE STUDY: PQR\$ Analysis

To receive an electronic copy of this case study, please send an email to [ShahrukhIrani1023@yahoo.com](mailto:ShahrukhIrani1023@yahoo.com).

# How To Do PQR\$T Analysis?

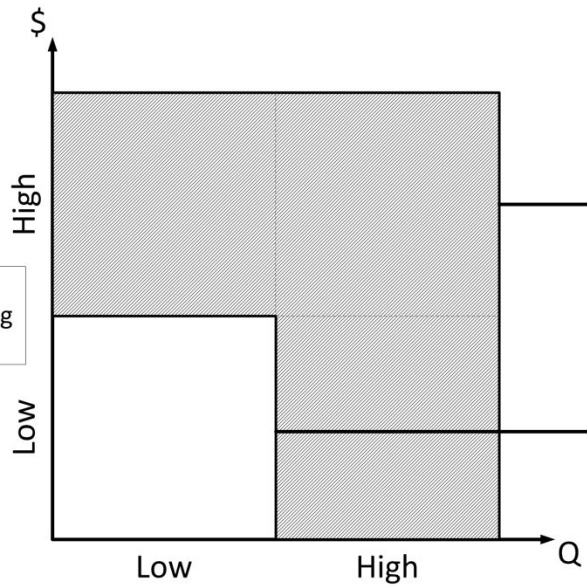


# Here's How

...

Complete product mix

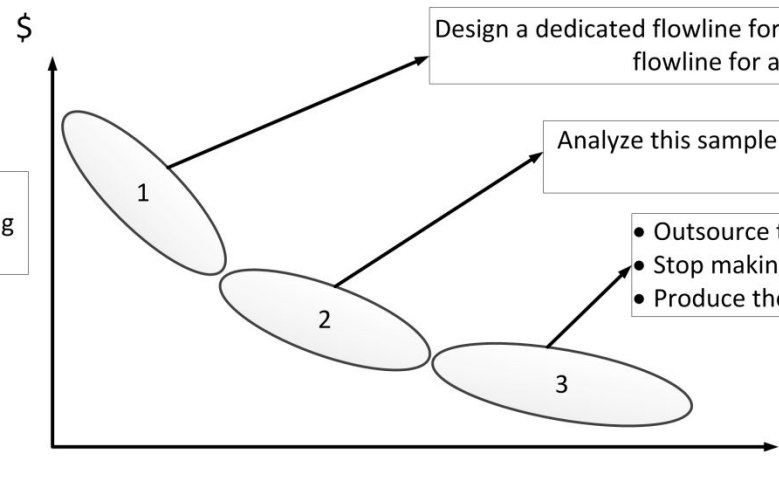
Analyze the product mix using PQ\$ Analysis



Analyze this sample of products with PR Analysis to find part families

Outsource these products?

Analyze the product mix using PQ\$T Analysis



Design a dedicated flowline for a single product, or design a flexible flowline for a family of products

Analyze this sample of products with PR Analysis to find part families

- Outsource these products?
- Stop making these products?
- Produce them in a separate area of the factory?