Realizing an ROI for Fully Autonomous Robots

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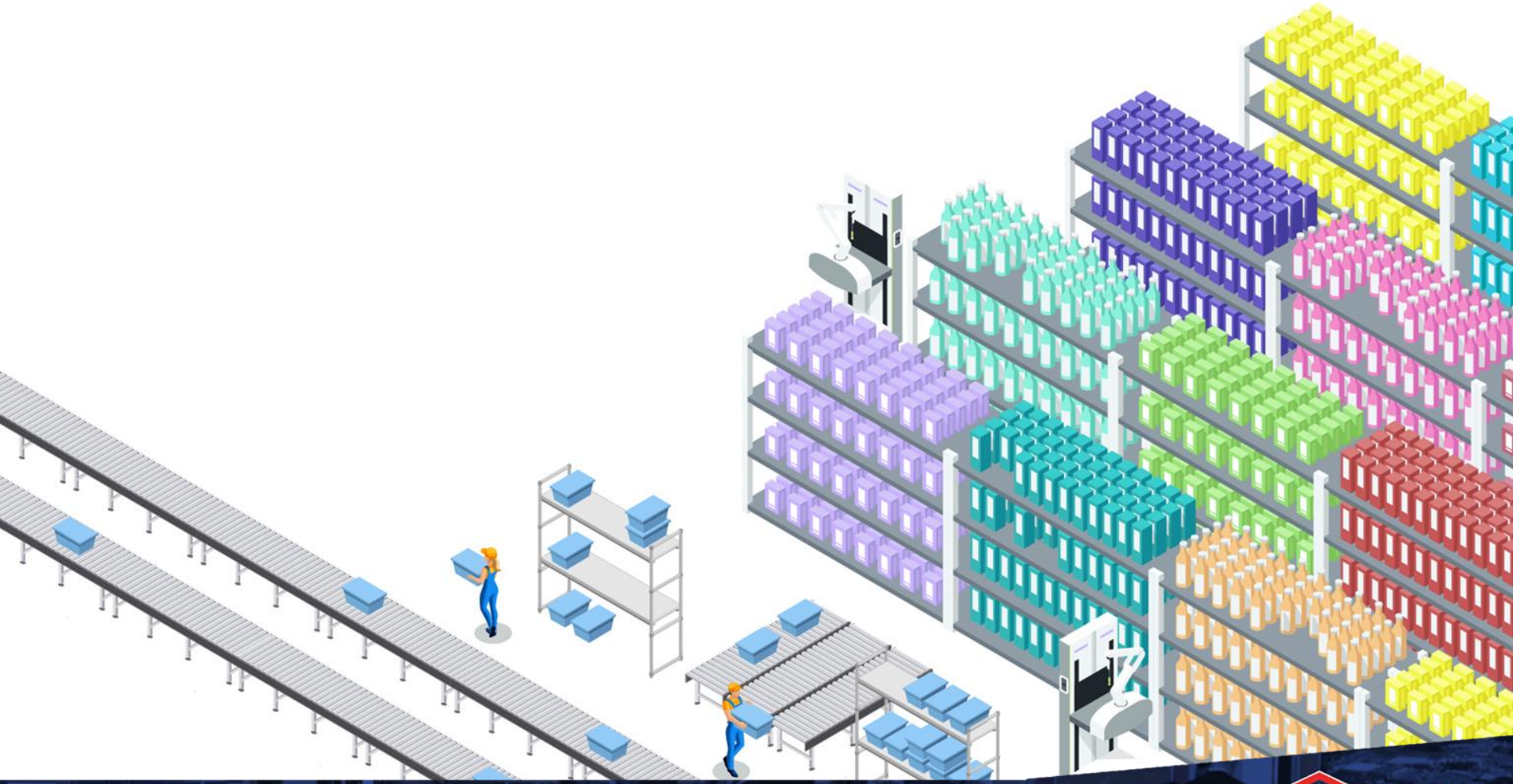

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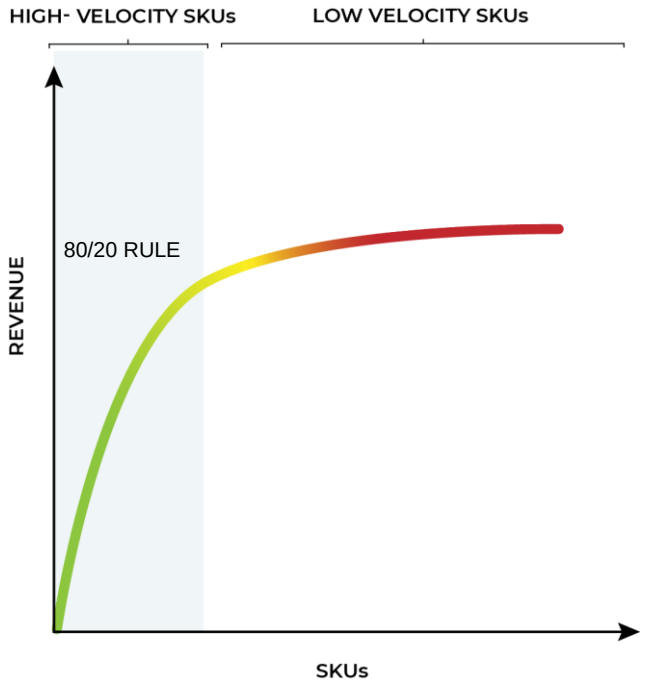
Market Challenges Faced by Retailers

Consumers are placing orders with as little as one item in their shopping cart

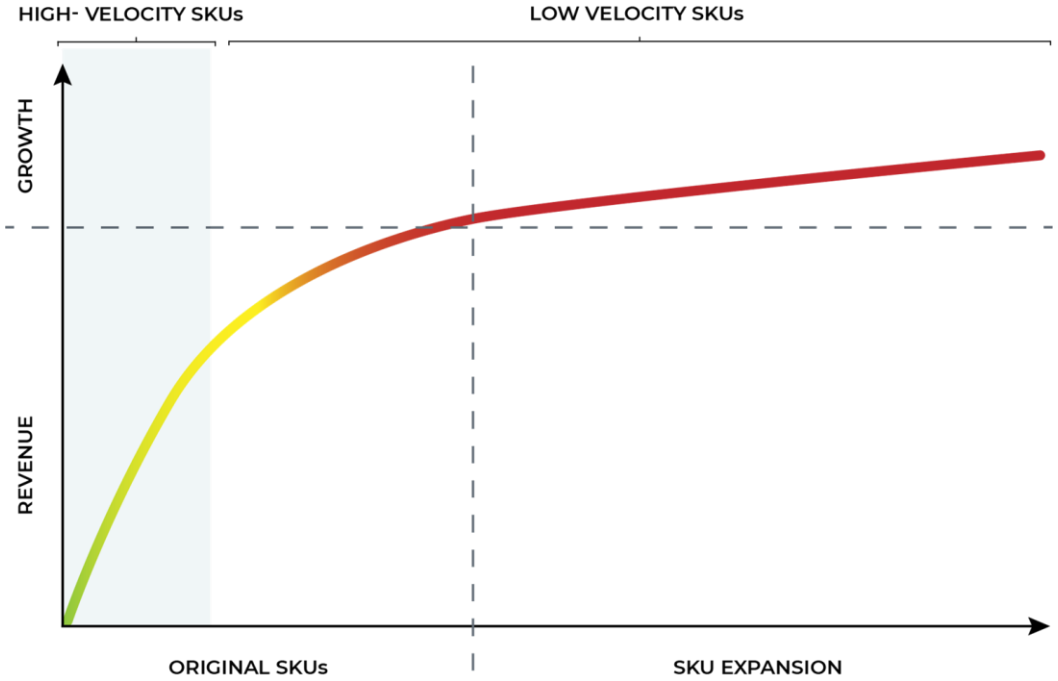
More low velocity SKUs than ever, being offered to consumers

Consumers desire faster and even same day shipping services

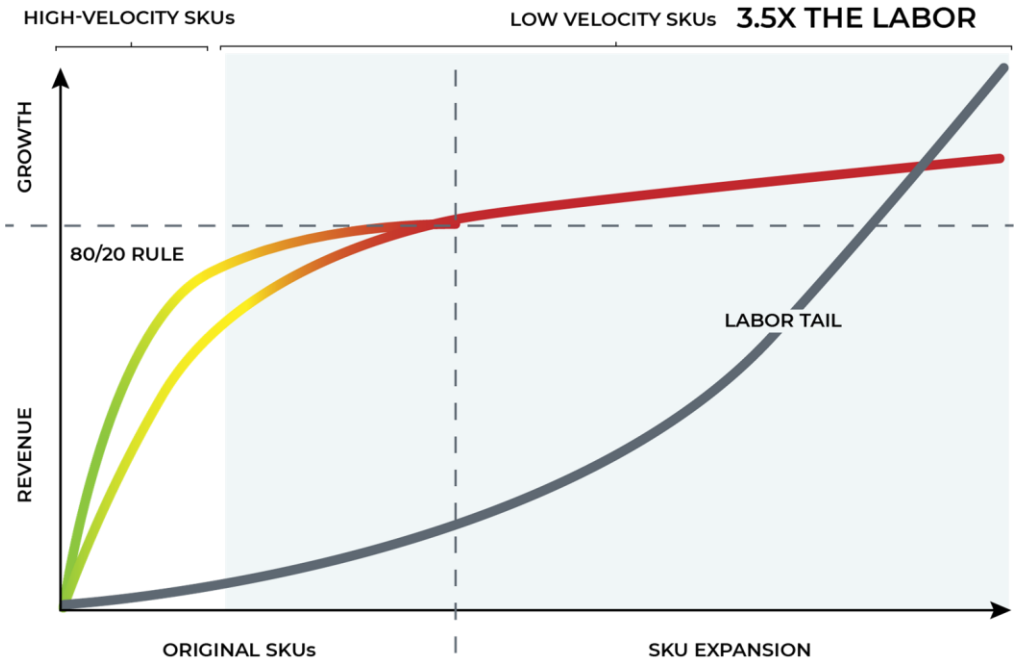
TRADITIONALLY **80%** OF **YOUR REVENUE** CAME FROM **20%** OF **YOUR PRODUCTS**



IN THE NEW LANDSCAPE, THE LONG TAIL IS **KEY** TO **MARKET GROWTH**



...WHICH HAS **CREATED A PROBLEM** WE CALL THE **'LABOR TAIL'**



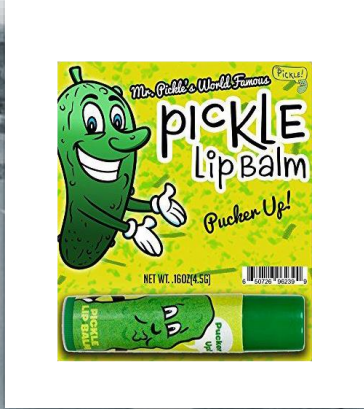
THERE ARE MANY EXAMPLES OF A DILEMMA BETWEEN THE LONG AND LABOR TAILS

Dividing operators into thriving organizations

VS

Those in decline or those struggling to keep up

SOME SKUS JUST **DON'T BELONG IN AUTOMATION** LIKE THIS



AND...MAKING PEOPLE WORK HARDER IS NOT SUSTAINABLE

- Voice pick
- Finger scanners
- Pick-to-light systems
- Labor management systems

THUS, **PRESSURE IS BUILDING**
IN OUR WAREHOUSES

PRESSURE CAN BE RELIEVED
WITH A ROBOTIC LABOR SYSTEM

A Robotics Labor System **combines the benefits** of automated & labor systems

OPTIMIZED FOR
E-COMMERCE
LONG TAIL

LABOR-LIKE COST
CHARACTERISTICS

FULLY
AUTOMATED

STANDARD
INFRASTRUCTURE

HUMAN
ACCESSIBILITY

EASY TO INSTALL
AND SCALE

KEY FACTORS **FOR DETERMINING ROI**

- SKU type & quantities
- Picking methods & rates
- Operating hours
- Order profiles
- Inventory policies
- Tote capacity
- Shelves & slot dimensions
- Replenishment & stocking process
- Ship method

METHODS **FOR DETERMINING ROI**

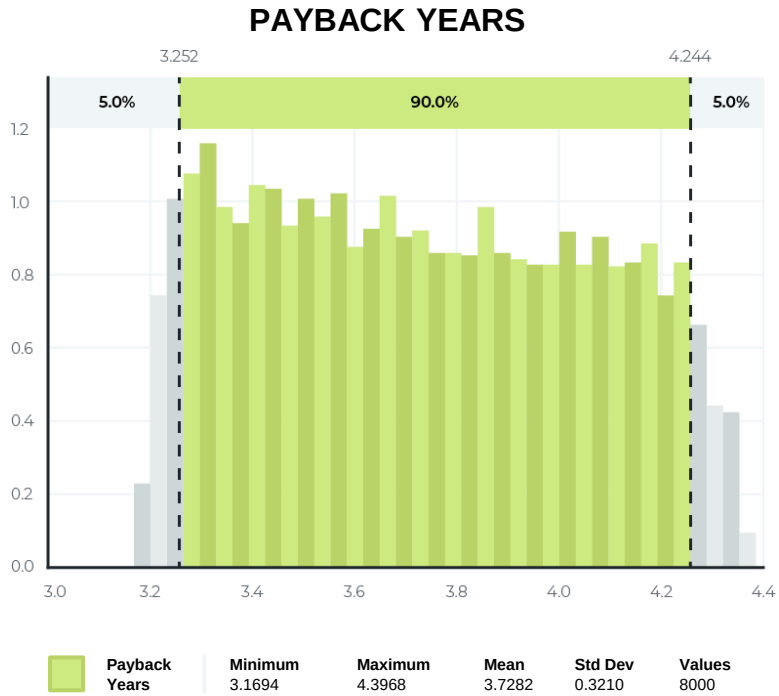
System Layout and Throughput

- Design Inputs:
  - Expected ranges for total orders, lines per order, units per line, errors and exceptions
  - Multiple design scenarios: conveyor capacity, layout of picking systems, and picking methods
- Evaluation metrics: resource requirements, order cycle time, order lead time, resource contention
- Evaluation Method: Discrete Event Simulation for each scenario across thousands of iterations

METHODS **FOR DETERMINING ROI**

Financial Evaluation

- Ranges for future: labor costs, turnover rates, projected order volume growth, future automation expansion costs
- Evaluation Metrics: ROI and Payback Period
  - Expressed as a distribution based on simulation iterations
  - Used to establish confidence intervals for ROI and Payback Period time
- Evaluation Method: Monte Carlo Simulation



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