DataTrends Learning
Syllabus Section: Operations Processes

Interactive Operations & Flow Designer — Student Lab Worksheet

Bespoke Burger Co. • Inputs, 4Vs, Sequencing & Scheduling (CPA/Gantt), M-C-I KPI Dashboard & Outputs

🌐 **Launch Simulation Website: https://www.datatrends.com.au/operations-sim.html**

Test every setting in the live simulator to complete the tables below!

Student Name: _____ Class: _____ Date: _____

PART 1: SEQUENCING & SCHEDULING — FLOW DESIGNER, CPA & GANTT CHART (TAB 1)

Instructions: Open https://www.datatrends.com.au/operations-sim.html and click 🔄 **Reset**. Above the animated kitchen floorplan, click each of the three **Flow Presets** and record the live figures from the KPI Scoreboard and **Tab 1**:

Flow Preset Tested in Simulator	Active Critical Path Chain & CPA (mins)	Order Lead Time (mins)	Effective Capacity (/day)	Warranty Defect Rate (%)	Daily Net Profit ($)
1. ⚡ Parallel CPA Flow (Default)	A → B → E → G (____ m)	_____ mins	_____ / 400	_____ %	$_____
2. 🚗 Single-Line Serial Flow	A→B→C→D→E→F→G (____ m)	_____ mins	_____ / 400	_____ %	$_____
3. ⚠️ Bypassed Fryer/QC (Flawed)	A → B → E (____ m)	_____ mins	_____ / 400	_____ %	$_____

Experiment 1B: Testing Slack Time vs. Critical Path Bottlenecks

1. Click 🔄 **Reset** (so Parallel CPA Flow is active: `B: Grill = 8m`, `C: Toast Bun = 4m`, `D: Fry Chips = 6m`). In **Tab 1**, drag the slider for **C: Toast Bun** from `4m` up to `7m`.
   Question: Does the Calculated CPA (15 mins) change? Explain why using the terms *Critical Path* and *Slack Time* by referring to the blue vs. red bars on the Live Gantt Chart:

   Write your observation and HSC explanation here...

2. Leave `B: Grill` at `8m`, and drag **D: Fry Chips** up to `12m`. Watch the pulsing red dashed line on the kitchen floorplan.
   Question: Which station sequence is now the pulsing red **Critical Path**, and what is the new **Calculated CPA**?

   New Critical Path Sequence: _____ = _____ mins

3. Click 🔗 **Draw / Toggle Sequence Arrow** above the floorplan. Design your own custom sequence or disconnect Station G (QC & Pack). What warning appears in the **Sequence Audit** box?

   Sequence Audit Result: _____

PART 2: INPUTS — TRANSFORMED VS. TRANSFORMING RESOURCES LAB (TAB 2)

Instructions: Click 🔄 **Reset** and open **Tab 2 (Inputs)**. Set *Transformed Resources* to maximum (**Artisan Wagyu $6.80**, **AI Forecast**, **100% Bespoke Diet**), then set *Transforming Resources* to minimum (**3 Staff**, **Untrained Casuals**, **Cramped**

Single-Grill).

Recorded Simulation Readout:
• Effective Capacity: _____ / 400 (Lost: _____/day)
• Customer Satisfaction (CSAT): _____ % | Profit: $_____

Fix the Bottleneck in Tab 2:
Upgrade HR & Facilities until Capacity ≥ 400/day.
• Optimal Staff & Plant: _____

HSC Short Answer: Using your simulation results, distinguish between *transformed resources* and *transforming resources* and explain why premium ingredients alone cannot satisfy customer demand.

PART 3: THE 4VS — VOLUME, VARIETY, VARIATION IN DEMAND & VISIBILITY (TAB 3)

Experiment 3A: Footy Surge (Volume & Variation)

In **Tab 3**, drag **1. Volume** to `650/day` and **3. Variation in Demand** to `3 (Extreme Footy Surge)`.

1. Effective Capacity drops from `391/d` to: _____ / `650`
2. Unmet Demand (lost orders/day): _____ / `day`
3. Adjust HR, Plant & Tech so Capacity ≥ 650/d:
   - Winning Config: _____
   - Resulting Daily Profit: $_____

Experiment 3B: Open Theatre Wall (Visibility)

Click 🔁 **Reset**. In **Tab 3**, set **4. Visibility** to `3 (Live Theatre Grill)` so the divider wall opens on the canvas. Test **HR Training** in Tab 2:

- **Test 1 (Untrained Casuals + Visibility 3):**
  CSAT = _____ % | Defect Rate = _____ %
- **Test 2 (Certified Grill Masters + Visibility 3):**
  CSAT = _____ % | Defect Rate = _____ %

PART 4: LAYOUT, TECHNOLOGY & PHYSICAL WORKSTATION DRAGGING (TAB 4 & CANVAS)

1. Select 🖐️ **Move Stations (Drag)** above the floorplan and drag stations B, C, D, E, F far apart to the edges of the floorplan. Record the new **Motion Waste**: +_____ `mins` and **Order Lead Time**: _____ `mins`.
2. In **Tab 4**, test all three 📐 **Process Layout** presets. Which layout achieves the best fit for:
   - High Volume (650/d), Low Variety (Set Menu): _____
   - High Variety (Bespoke Menu), Moderate Volume: _____

PART 5: MONITORING, CONTROL & IMPROVEMENT (M-C-I) KPI DASHBOARD LAB (TAB 5)

Instructions: Open **Tab 5: 📊 M-C-I Dashboard (KPI → Control → Improve)** at https://www.datatrends.com.au/operations-sim.html.

Experiment 5A: Stage 1 Monitoring (Planned KPI Targets vs. Actual Performance)

Click 🔁 **Reset**, open **Tab 5**, and switch **Planned KPI Target Strictness** (top-right of Tab 5) from *HSC Benchmark* to **Six Sigma World-Class**. Record how many KPIs are on target:
• Under **HSC Benchmark Targets**: ___ / `6 On Target` | Under **Six Sigma World-Class Targets**: ___ / `6 On Target (___ KPI Breaches)`

Experiment 5B: Stage 2 Control (Taking Managerial Corrective Action)

Select ⚠️ **Crisis 3: Defective Burgers & Warranty Blowout** from the top Scenario Bar, then open **Tab 5**. Record the initial metrics below, then click 🛡️ **Fix Quality KPI: Auto-Reject QC + Grill Master Training** in Stage 2 (Control) and record the result:

KPI / Operational Metric	Before Corrective Action (Crisis 3)	After Clicking "🛡️ Fix Quality KPI"	Improvement / Variance Closed (Δ)
Warranty Defect Rate (%)	13.8%	_____ %	-_____ %
Daily Warranty Cost ($/day)	$880 / day	$_____ / day	-$_____ / day
Customer Satisfaction (CSAT)	55%	_____ %	+_____ %
Daily Net Profit ($/day)	$905 / day	$_____ / day	+$_____ / day

Experiment 5C: Stage 3 Continuous Improvement (Kaizen & The 5 HSC Pillars)

Click 🔄 **Reset**, open **Tab 5**, and inspect **Stage 3: Improvement** on the right. Click 🚀 **Run Kaizen Bottleneck Sprint (-1m) twice** and record the impact:

• Initial Bottleneck Station: _____ → After 2 Kaizen Sprints: _____

• Order Lead Time: `13.8m` → _____ `m` | First-Pass Yield: `96.9%` → _____ `%` | Calculated CPA: `15m` → _____ `m`

PART 6: OUTPUTS & LIVE AUTO-CHECKED LAB MISSIONS (TAB 6)

Open **Tab 6 (** 🧪 **Student Lab Missions & Outputs)** on https://www.datatrends.com.au/operations-sim.html:

1. Complete the **6 Live Auto-Checked Lab Missions** (left panel) and the **12 Experimental Simulation-Testing Questions** (right panel).
2. **Final Score Achieved:** Live Lab Missions Verified: _____ / `6` | Experimental Quiz Score: _____ / `12`