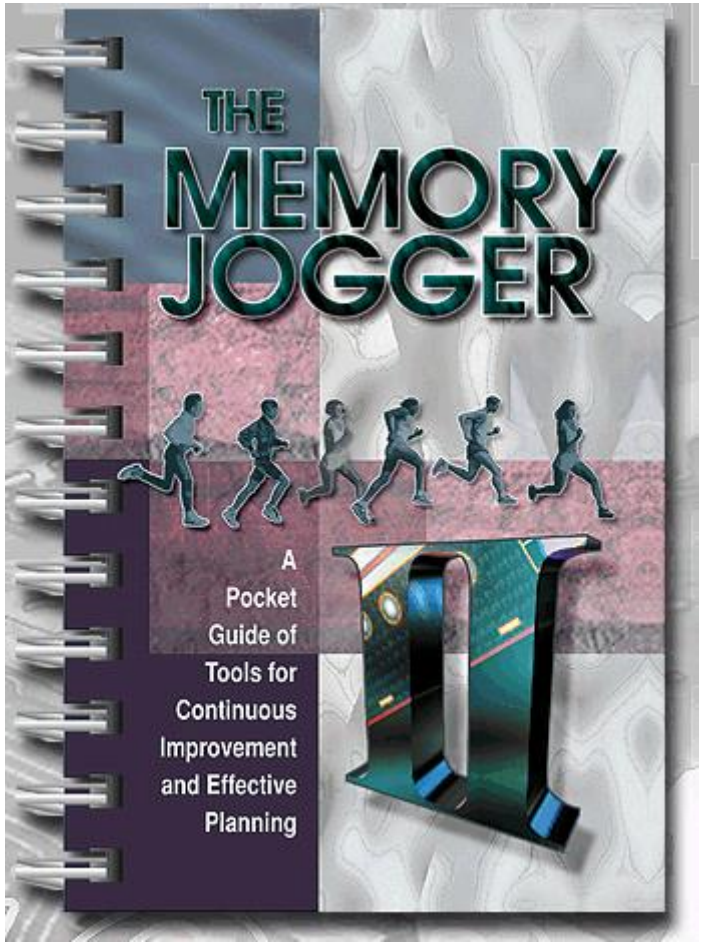
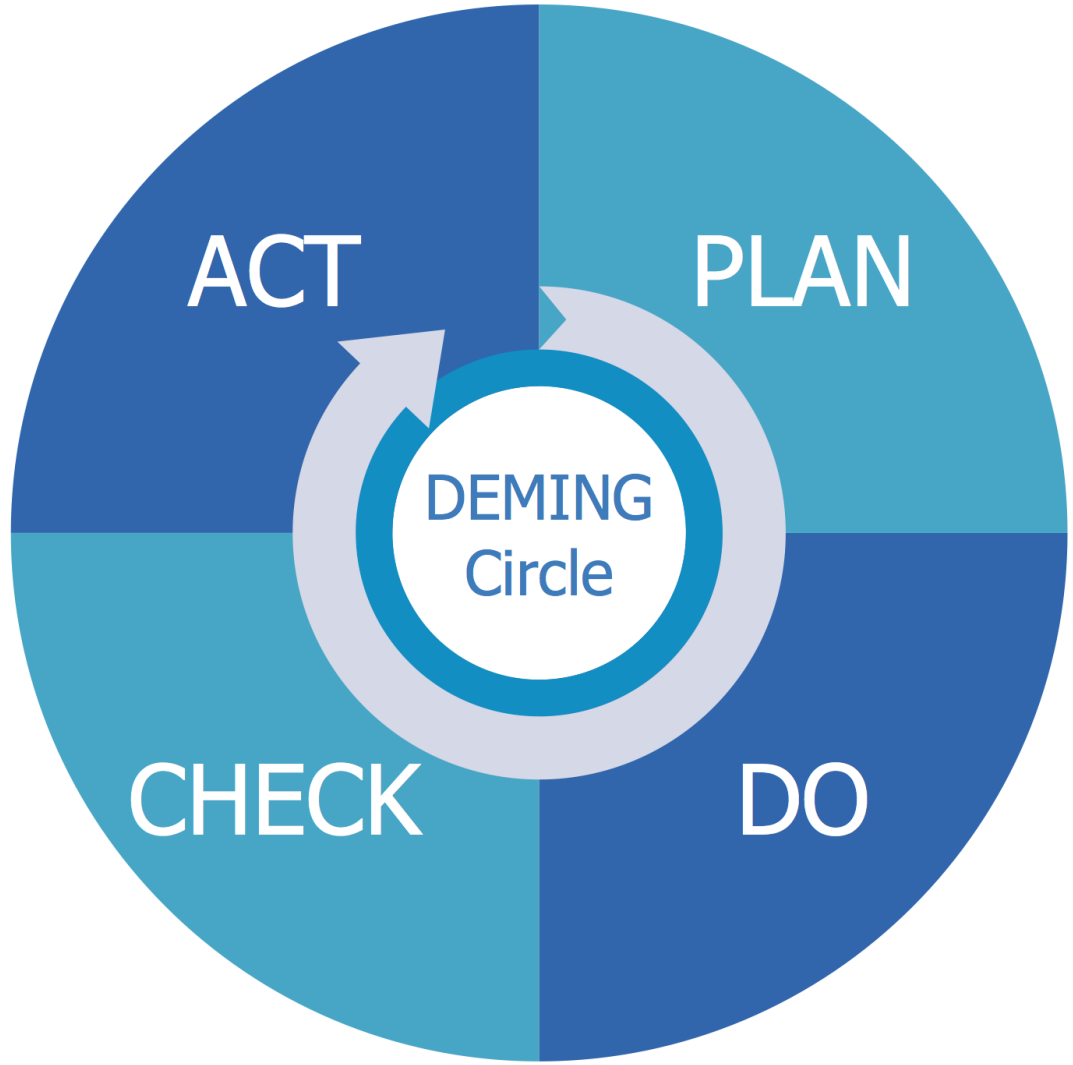
Process-Improvement Model
Problem Solving Model

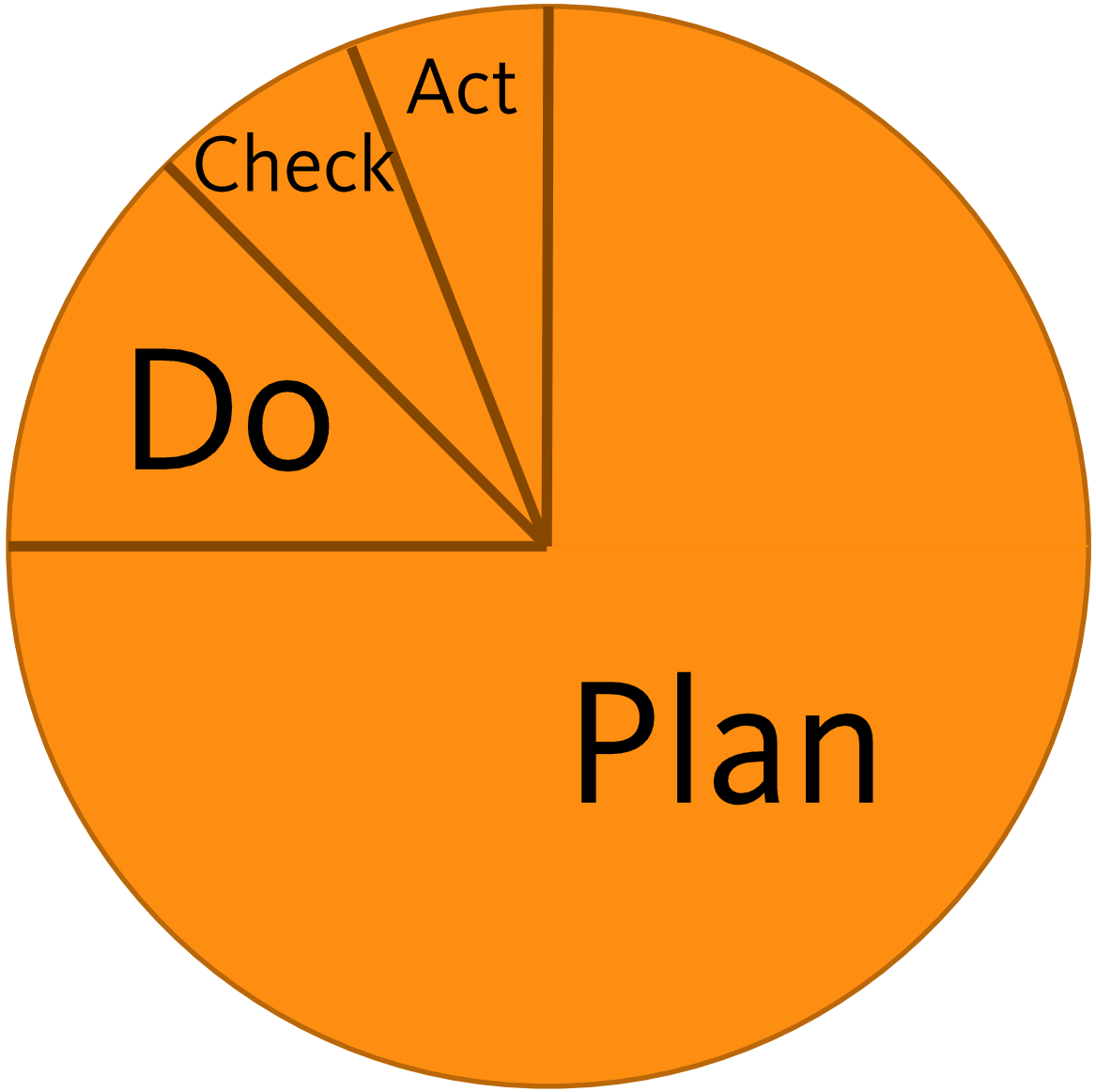
PDCA - Plan, Do, Check, Act

Craig Thornton



https://goalqpc.com/


ACT
PLAN
DEMING
Circle
CHECK
DO


Act
Check
Do
Plan

1. Select the problem/process to be addressed
   a) Look for changes to business indicators
   b) Assemble a team
   c) Review the data
   d) Create improvement statement

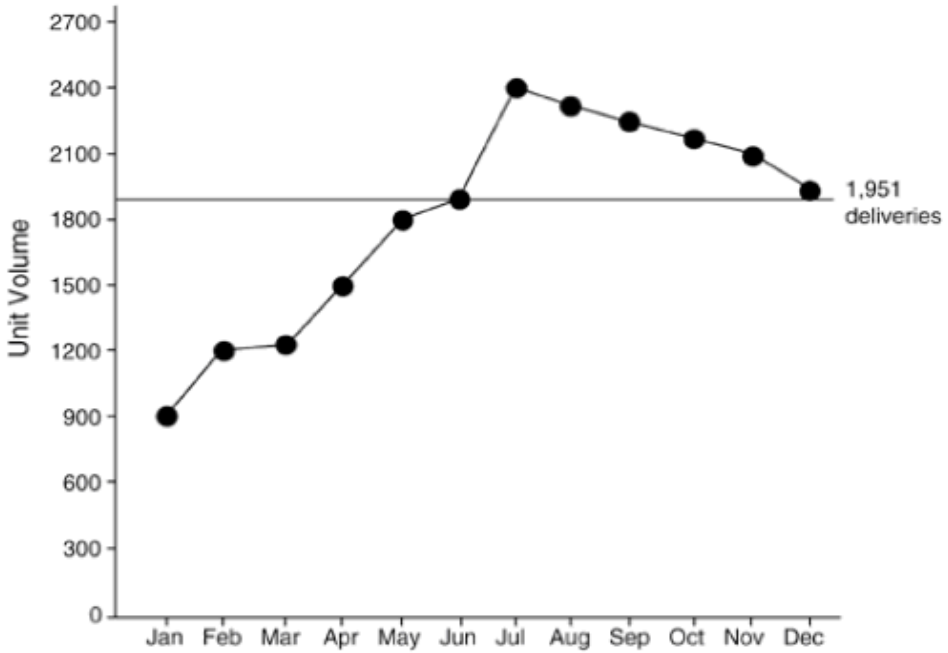
Tools: Brainstorming, Check sheets, Control Charts, Histograms, Pareto, Run charts

Pizza Planet experienced 6 months of decline after period of rapid growth.

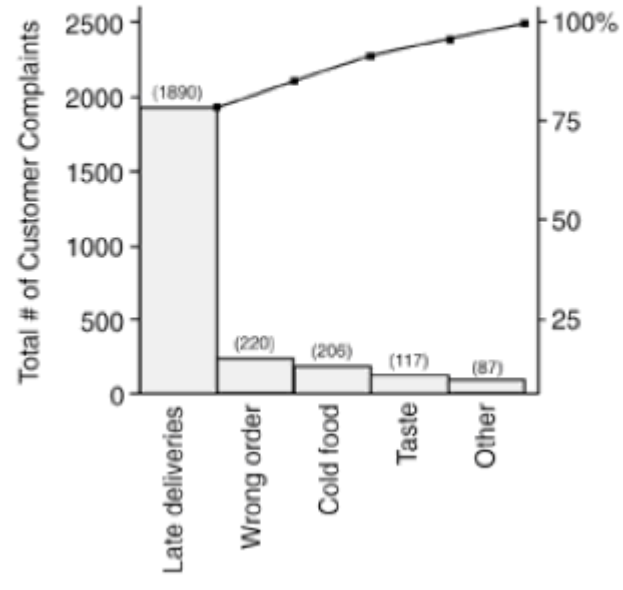
Team created to investigate, create plan and improve.

Collected data.

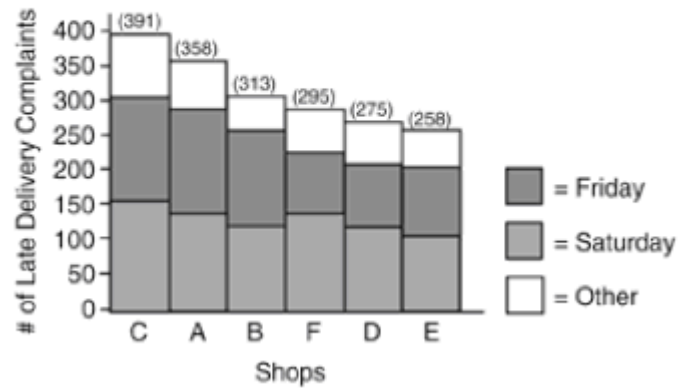
Run Chart
Average monthly volume of deliveries (per shop)



Pareto Chart
Types of customer complaints
Total=2520 October-December (across 6 shops)



Pareto Chart
Late delivery complaints
Total=1890 October-December (across 6 shops)

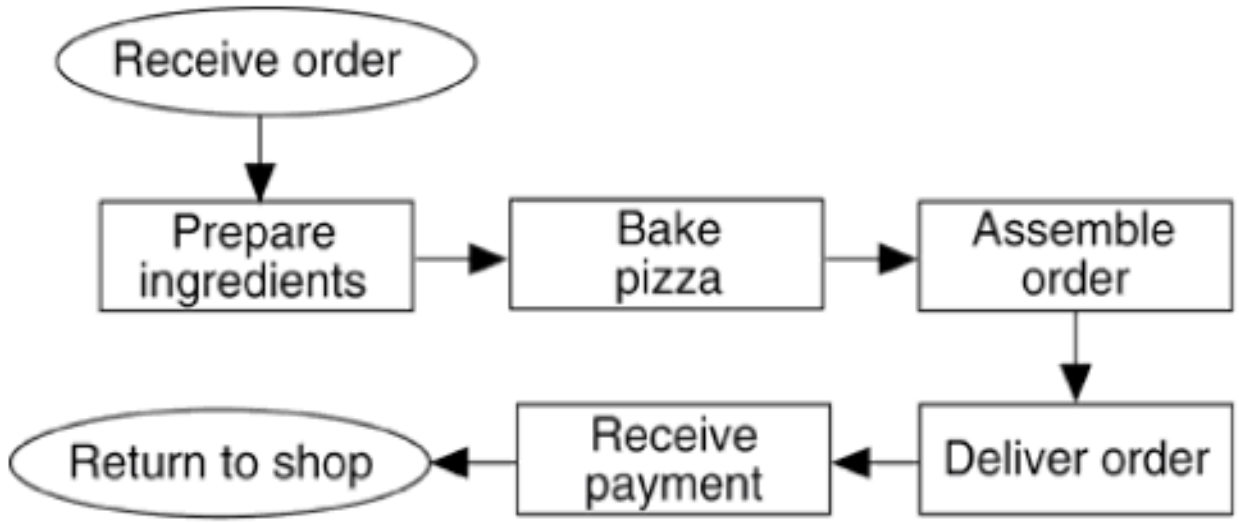


Improvement Statement

Reduce late deliveries on Fridays and Saturday

2. Describe the current process
    a) Select relevant processes
    b) Describe process under study

Tools: Brainstorming, Flow charts (i.e. top-down, swim lane), Tree diagram

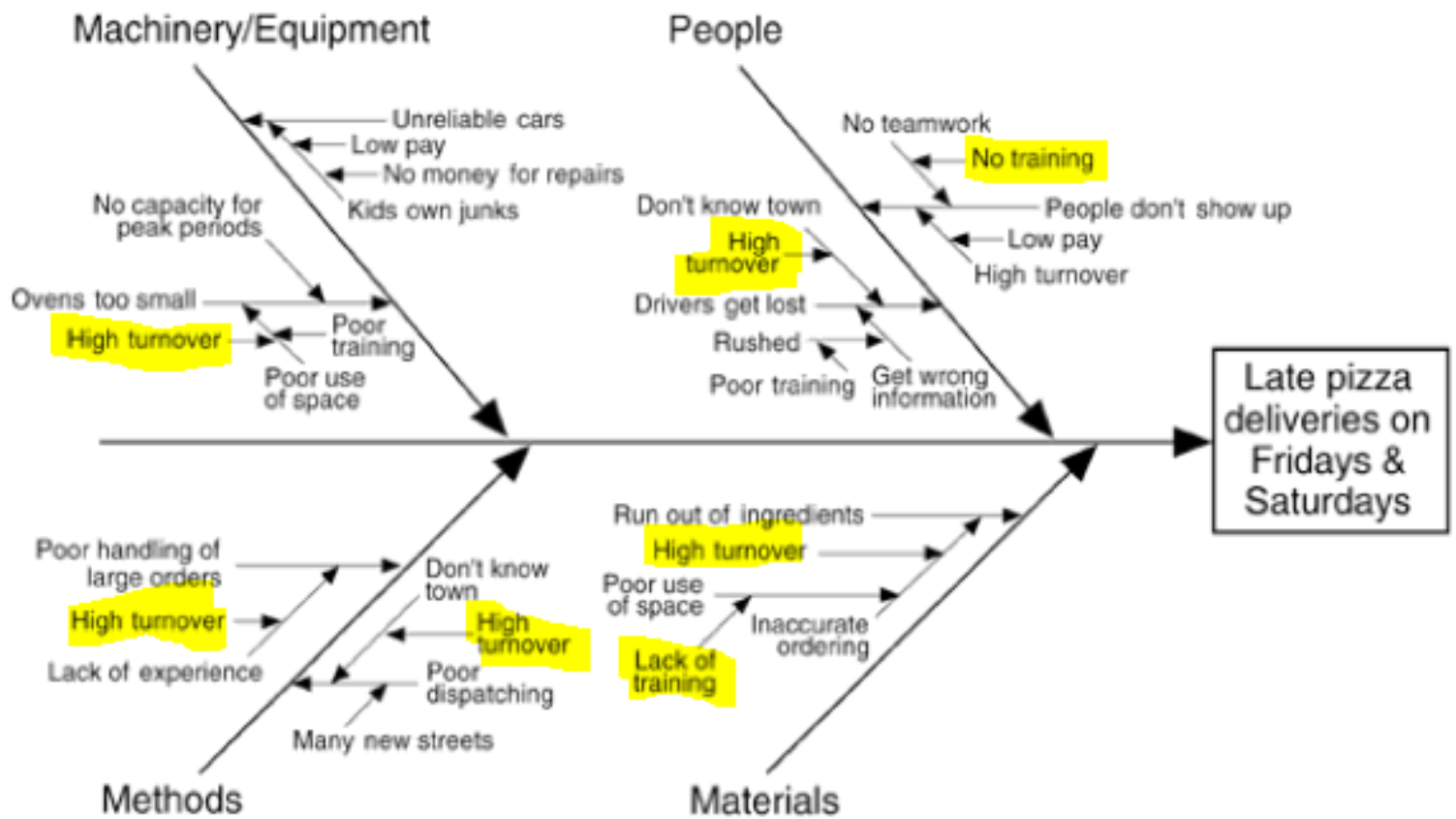

Receive order
Prepare ingredients
Bake pizza
Assemble order
Deliver order
Receive payment
Return to shop

3. Describe possible causes and agree on root cause
    a) Gather facts and opinions on cause
    b) Confirm opinions on root cause with data

Tools: Brainstorming, C&E fishbone diagram, Check Sheets, Pareto, Run Chart, Scatter

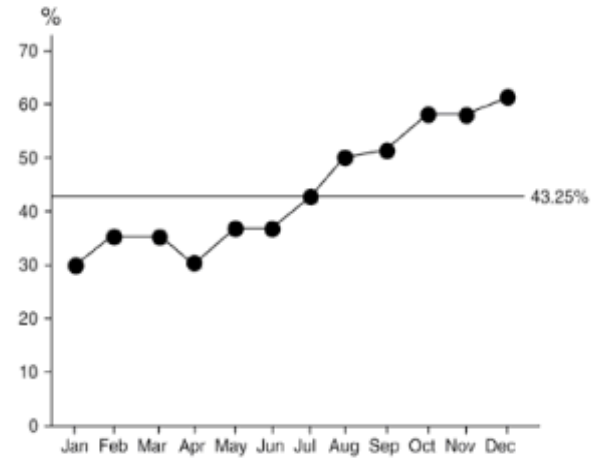
C & E/Fishbone Diagram

Reasons for late pizza deliveries

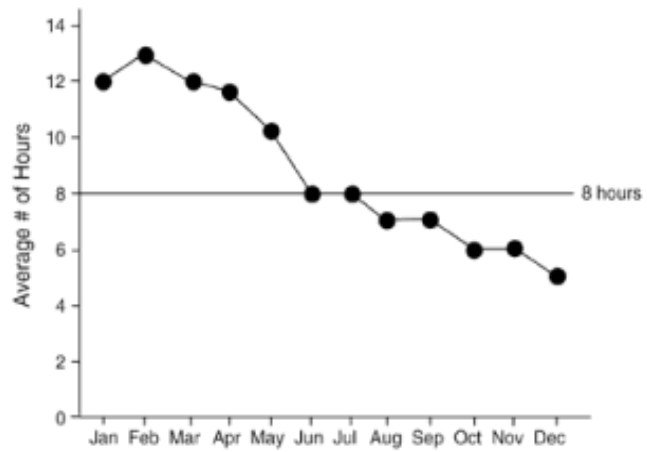


Run Charts

Average turnover rate of employees (company-wide)



Average training hours of new employees



4. Develop a solution and action plan
    a) Define solutions
    b) Plan the change
    c) Set targets for improvement
    d) Monitor results

Tools: Brainstorming, Flow Charts, Gantt Chart, Prioritisation Matrices, Tree Diagrams

Tree Diagram

Reduce turnover rate of employees (company-wide)

Prioritization Matrix

Selecting the best training program components

Tasks & Options \ Criteria & Weighting	Effectiveness (.60)	Feasibility (.19)	Time (.19)	Cost (.01)	Total
Train before shift	◉	◉	○	○	7.70
Train during shift	○	△	◉	◉	3.78
Train after shift	△	○	○	○	1.77
Train at the shop	◉	◉	○	○	7.70
Train at home	○	◉	◉	◉	5.29
Develop videos	◉	◉	◉	○	8.83
Use texts	○	◉	○	◉	4.16
Use role play	◉	◉	◉	◉	8.89
Evaluate each other	◉	◉	○	○	7.70
Pre/post test	◉	◉	◉	○	8.83
Set clear performance standards	◉	◉	◉	◉	8.89

◉ = 9 Excellent ○ = 3 Fair △ = 1 Poor

Matrix & Gantt Chart Combined

New training program timeline

Tasks* \ Responsibility	Managers	Employees	Human resources	President	January	February	March	April
Train at the shop before the shift	◉	○	○				■	■
Develop videos	○	○	◉	△		■		
Use role play	◉	○	○				■	■
Evaluate each other	○	◉	○				■	■
Use pre/post test	◉	○	○	△			■	■
Set clear performance standards	○	△	○	◉	■			

◉ = Primary responsibility
○ = Secondary/team member
△ = Need information to/from

*These were the highest rated tasks from the Prioritization Matrix on the previous page.

Targets:

- Reduce turnover from 62% to 30%
- Reduce avg. time from order to delivery from 40 to 25 minutes
- Reduce customer complaints by 50%
- Increase monthly volume to 2400 from 1891 pizzas

5. Implement the solution
    a) Pilot the solution
    b) Follow plan
    c) Monitor milestones

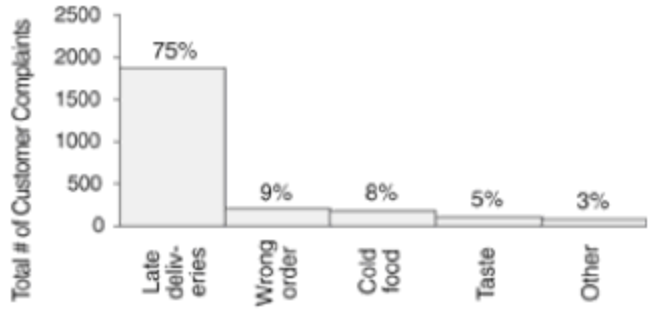
Tools: Flow Charts, Gantt Chart, Tree Diagrams, Run Charts, Check Sheets, Histograms

6. Review and evaluate results
   a) Confirm measures (are they valid?)
   b) Is solution working?
   c) Any unintended consequences?

Tools: Pareto Chart, Run Charts, Check Sheets, Histograms

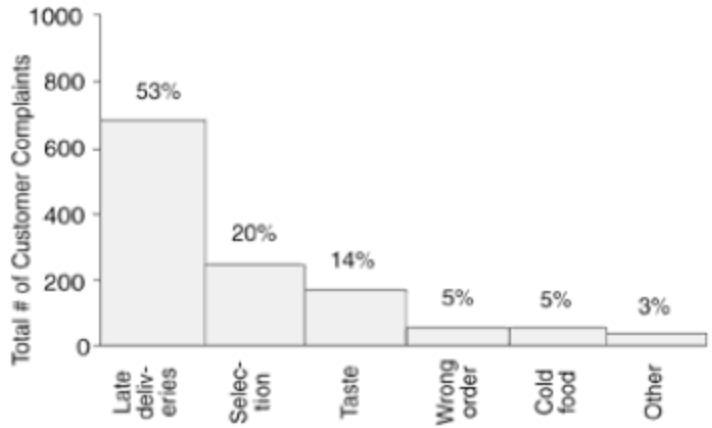
Pareto Charts

Before employee training



Total=2510
October-December
(across 6 shops)

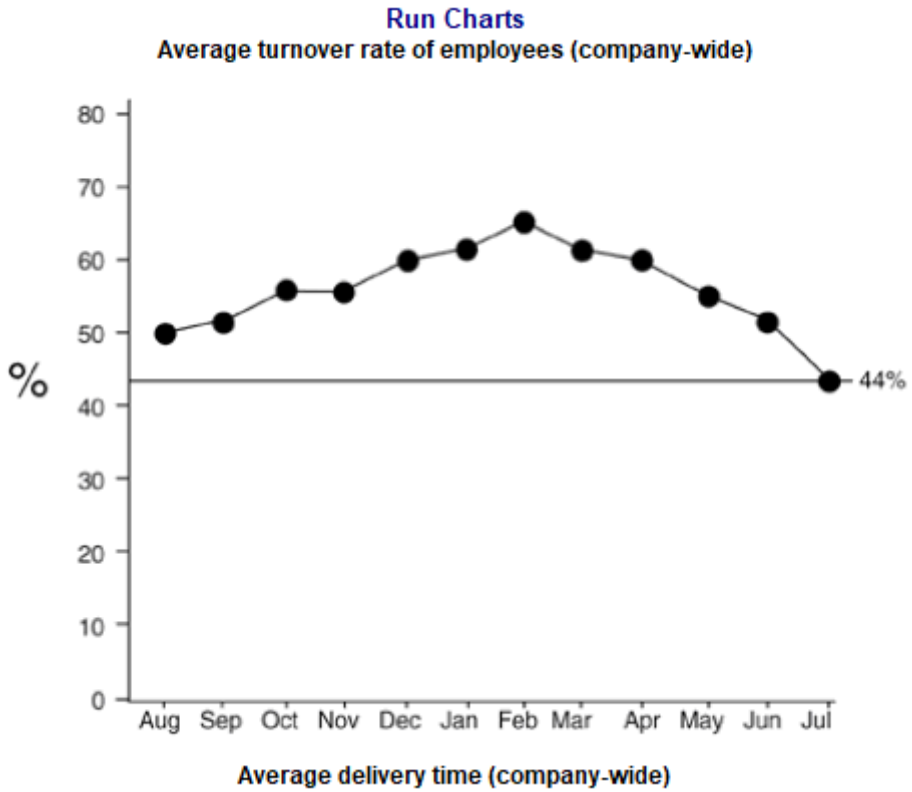
After employee training

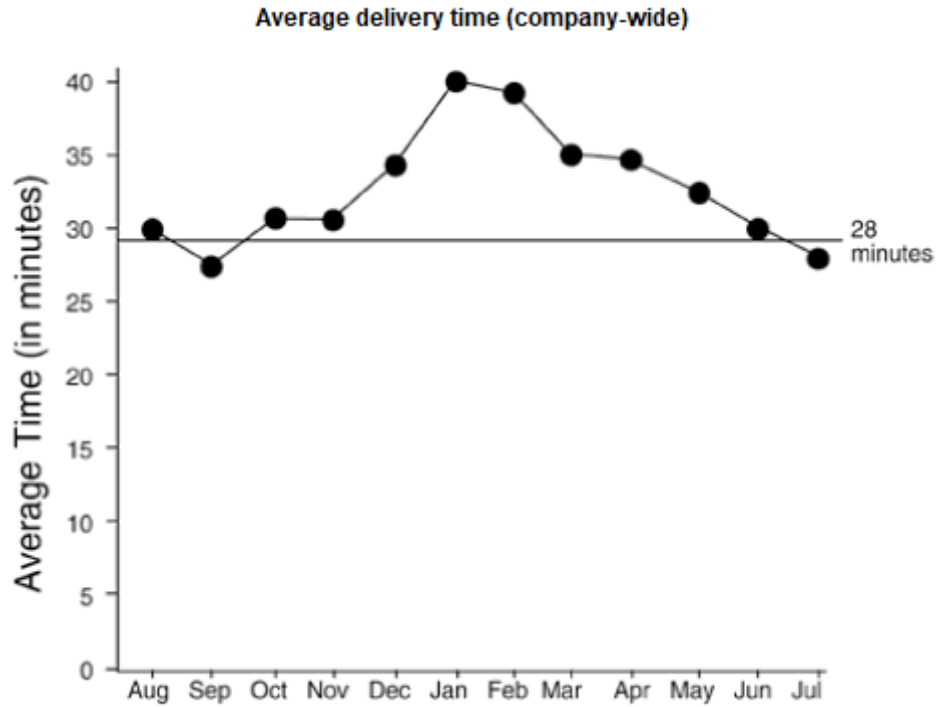


Total=1310
May-July
(across 6 shops)

Actuals:

- Reduced turnover 44% (target 30%)
- Reduced avg. time from order to 28 minutes (target 25 mins)
- Reduce customer complaints by 52% (target 50%)
- Increase monthly volume to 2250 (target 2400)


Run Charts
Average turnover rate of employees (company-wide)
%
80
70
60
50
40
30
20
10
0
Aug Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul
44%
Average delivery time (company-wide)


Average delivery time (company-wide)
Average Time (in minutes)
40
35
30
25
20
15
10
5
0
Aug Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul
28
minutes

7. Learnings
    a) Assess the results and recommend changes
    b) Continue improvements and standardise
    c) Celebrate

Tools: Story board, Brainstorming

Q&A