

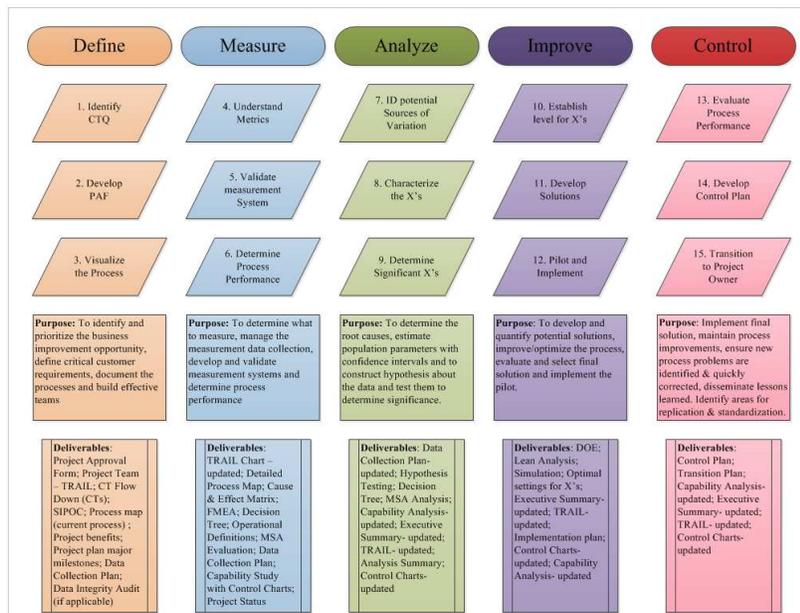
LeanOhio Green Belt: Transforming the Public Sector

Week Two

Critical To
Quality – CT
Flowdown

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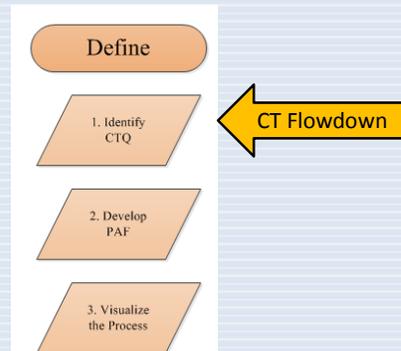
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DMAIC Flow

- Define:
 - Identify Critical to Quality
 - Develop Project Charter
 - Visualize the Process

Define Purpose: To identify and prioritize the business improvement opportunity, define **critical customer requirements**, document the processes and build effective teams.



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COPQ

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Cost of Quality

- The Cost of Quality is made up of four cumulative area of costs:
 - Appraisal
 - Detection
 - Internal Failure
 - External Failure
- The Cost of Poor Quality consists of those costs which are generated as a result of producing defects: Internal Failure and External Failure

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Cost of Poor Quality (COPQ)

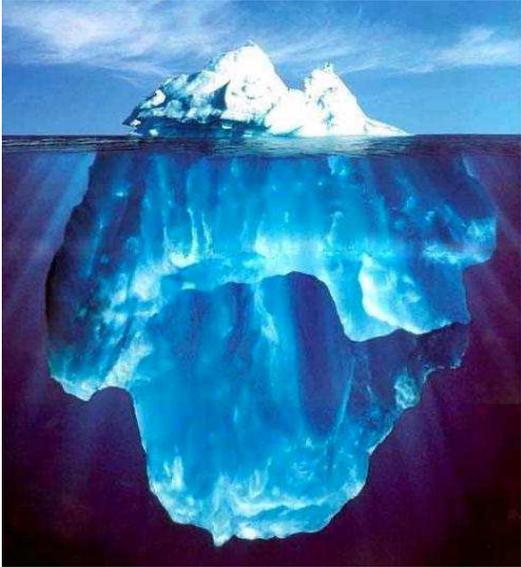
- COPQ consists of those costs which are generated as a result of producing defects.
- Defect: A defect is defined as any part of a product or service that:
 - Does not meet customer specifications or requirements, or
 - Causes Customer dissatisfaction, or
 - Does not fulfill the functional or physical requirements (re-work)

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Customer complaints
Customer calls
Calls to legislators
Waiting
Defects - Returns

Transportation
Inventory
Motion
Over production
Over processing
Misplaced skills
Bad materials
Slow machines
Re-work
Waste
Storage
Paperwork
Approvals



Cost of Poor Quality

- Direct COPQ
 - Rework
 - Sorting
 - Warranties
- Indirect: Difficult to Measure
 - Inspections
 - Documentation
 - Delayed services
 - Financial costs to customer
 - Morale
 - Lost Sales

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Cost of Poor Quality (COPQ)

- COPQ represents the financial opportunity of your improvement effort (VOB)
- COPQ helps us understand the financial impact of problems created by “defects”.
- COPQ is a *symptom*, not specifically a defect itself
 - Projects fix defects thus reducing/ improving/ eliminating symptoms.

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Quality at the Source

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Quality at the Source

- Quality at the Source places the responsibility for catching errors in the hands of the operator.
- Quality is not just the responsibility of the quality control department.
- Process developed so workers recognize errors before they become defects.

Quality at the Source requires a Culture Shift

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Assuring First-Time Quality Means...

- Building a system with appropriate information
- Building poke-yoke (mistake-proofing) devices for common problems
- Never passing a defect on to the next process or person
 - Fix immediately
 - Find root causes
- Establishing clear decision rules

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CT Flowdown

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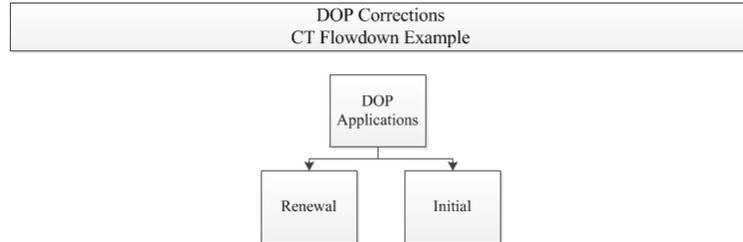
Project CT Flow-down

- Another Root Cause Analysis Tool.
- Helps define the scope of a project by breaking it down into critical pieces (areas, processes, requirements) to be considered
- Provides a clear picture of the different branches (areas/processes) under the project umbrella
- Helps identify the branch with the biggest potential for improvement (root causes)

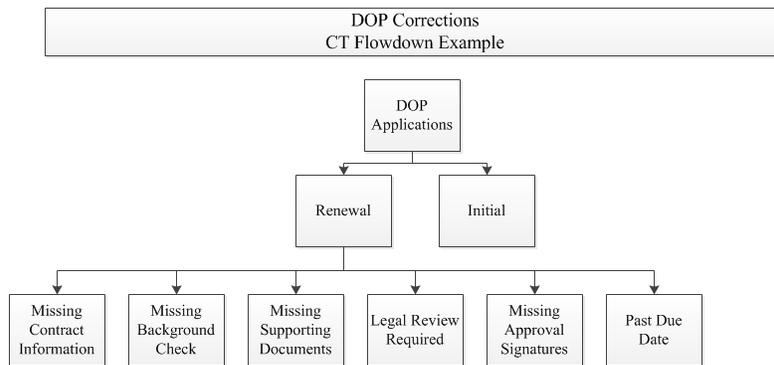
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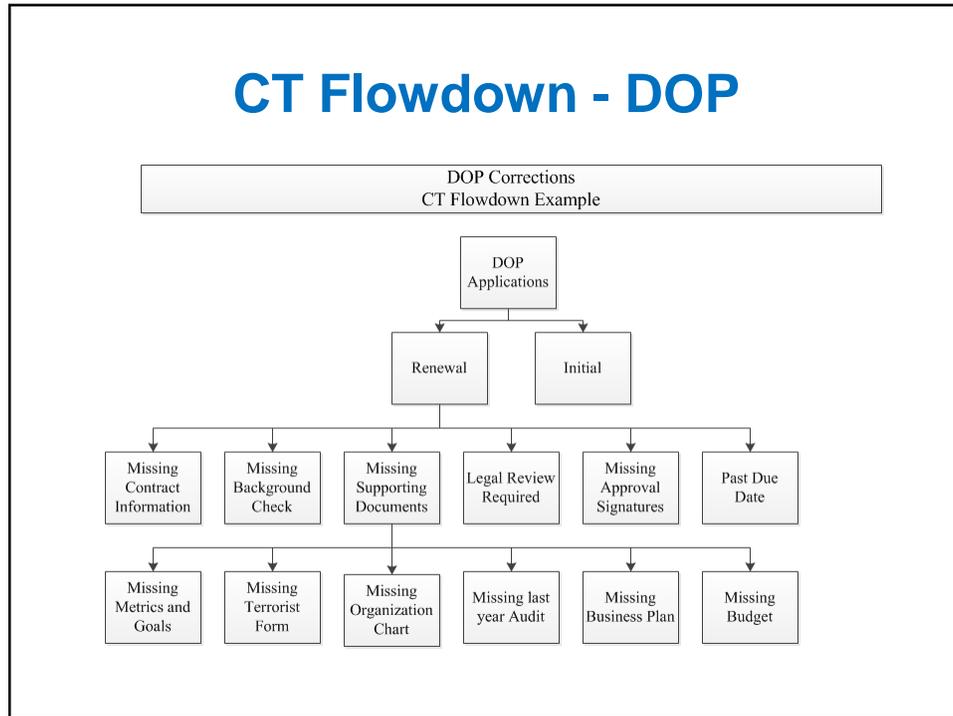
CT Flowdown - DOP



CT Flowdown - DOP



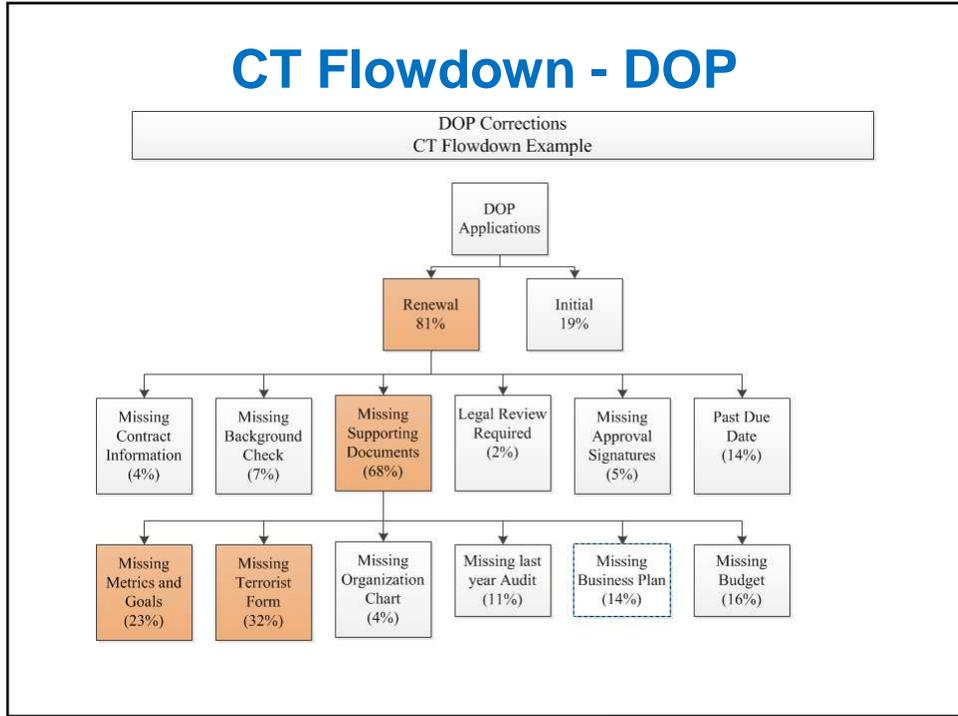
CT Flowdown - DOP



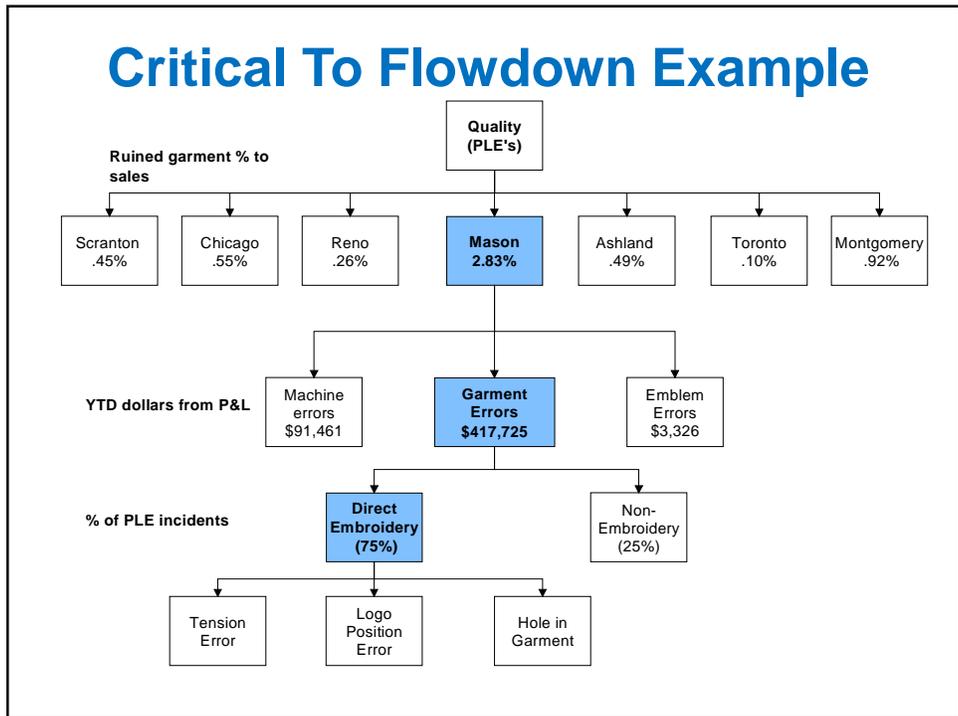
CT Flowdown

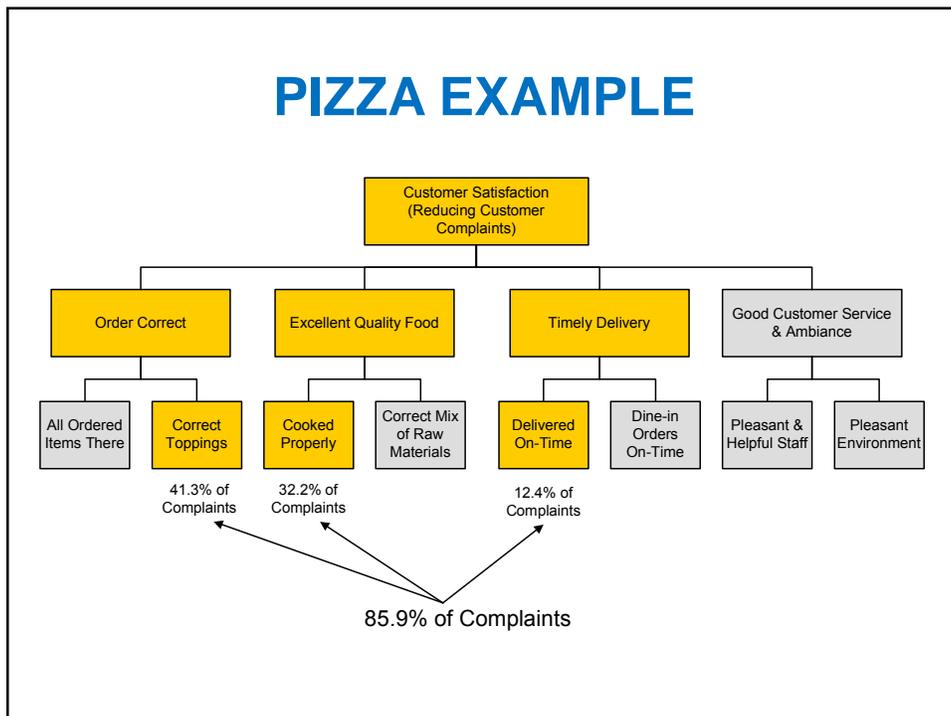
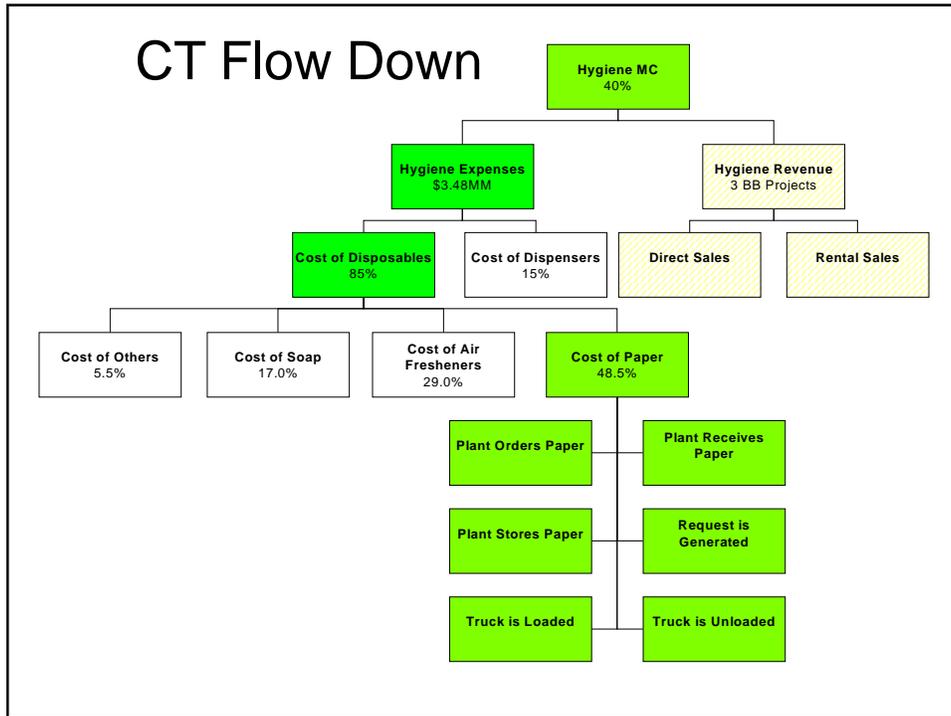
- Best if you add simple data to help see the root cause.

CT Flowdown - DOP



Critical To Flowdown Example





CT Flow-down – Class Exercise

- Identify the level for your project objectives
 - If you are at a high level, how would it flow down?
 - If you are at a low level, what higher levels did you flow down from, and what other CTs at your level might need to be considered?
- Draw a more complete CT tree
- Be prepared to present your work to the class
- Allow 15 minutes for this exercise

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Voice of the Customer

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Understanding the Customer

- Who is the customer?
 - Is the customer internal or external?
- What product, service or information does the customer receive?
- What are the customer requirements?
- Do the requirements represent the “Voice of the Customer”?
- Translate customer requirements into functional process requirements



Terms

- In defining the project opportunity, new terms (with acronyms) will be introduced. Here is summary of them:
 - VOC: Voice of the Customer
 - CCR: Critical Customer Requirements
 - CTQ: Critical to Quality

Voice of the Customer (VOC) - Examples

- “I’m always on hold or get transferred to the wrong person”
- “I need faster service”
- “We are getting too many customer returns”

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Translating VOC's to CCR's

- Often the Voices of Customers (VOC) are not specific and not in technical language.
- Sometimes the Voices of Customers are stated solutions
- Therefore VOC needs to be translated to the Critical Customer Requirements (CCR)

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Translating VOC to CCRs

- A Critical Customer Requirement (CCR) is a requirement that is important to the customer.
- CCR can be measured
(VOC may not be measurable)
- Establishes a target
 - Customer specifications
 - Acceptable range of performance

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Translating VOC to CCR: Examples

VOC	CCR
I'm always on hold or get transferred to the wrong person	Customer reaches correct person the first time within 30 seconds
I need faster service	I need my deliveries in 3 days or less
We are getting too many customer returns	Want no more than 3ppm customer returns.

Translating CCR's to CTQ's

- Often the Critical Customer Requirements are not stated in a way that can be measured internally.
- Therefore CCR needs to be translated to the Critical to Quality (CTQ), which can be measured in the factory.
- *NOTE: For some projects, CCR may be the same as CTQ.*

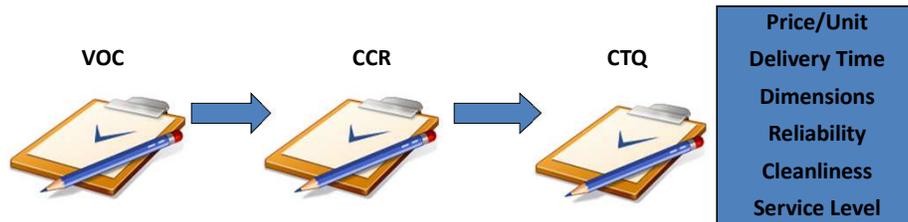
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Translating VOC to CCR to CTQ: Examples

VOC	CCR	CTQ
I'm always on hold or get transferred to the wrong person	Customer reaches correct person the first time within 30 seconds	Customer reaches correct person the first time within 30 seconds
I need faster service	I need my deliveries in 3 days or less	Our process lead time for this product needs to be 2 days or less
We are getting too many customer returns	Want no more than 3ppm customer returns.	Need to decrease defect rate to X

Process Output Indicators: CTQ's



VOC - Voice of the Customer
 CCR - Critical Customer Requirements
 CTQ - Critical to Quality

Comparison of VOC, CCR and CTQ

	VOC	CCR	CTQ
Language	Customer language	Technical/ specific language	Technical/ specific language
Metric	May not measurable	Can measure in final product	Can measure in business or factory

What makes a good coffee service?

- Supplier Perspective (Hotel)
 - Good Hot coffee
 - Clean Dishware
 - Clean Linen
 - Attractive Display
 - Extra-snacks
- Customer perspective (conference attendees)
 - Good Hot coffee
 - Fast line, especially for refills
 - Close to high capacity restrooms
 - Close to telephones
 - Room to chat



Identifying What Matters to the Customer



150 °F
(ideal temperature)



149.9 - 150.1 °F
(ridiculously tight)



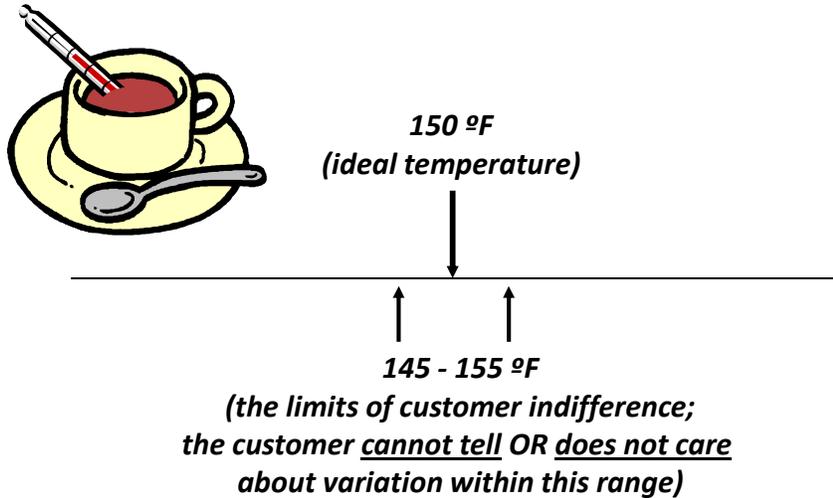
150 °F
(ideal temperature)



120 - 180 °F
(dangerously loose)

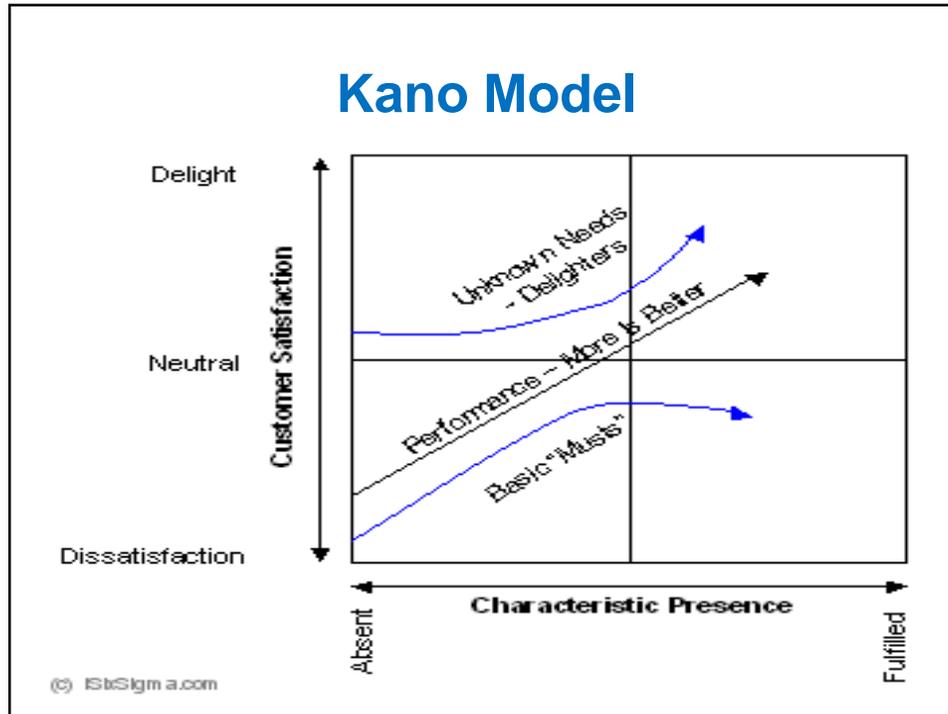


Defining What Matters to the Customer



Kano Model

- Kano classified Customer requirements into three categories
 - Basic (customer expects to get these features)
 - Performance (more is better)
 - Excitement (wow factor)



Customer requirements

	Automobile	Restaurant
Basic	Brakes function	No Food Poisoning
Performance	Acceleration	Fast Service
Excitement	“Look & Feel”	Ambiance

Exercise

- Complete a Kano model for:
 - Buying a house
 - Planning a wedding
 - Attending a conference
 - Other....

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Questions

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