SNS COLLEGE OF ENGINEERING

Kurumbapalayam (Po), Coimbatore – 641 107

An Autonomous Institution

Accredited by NAAC – UGC with 'A' Grade

Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai

DEPARTMENT OF COMPUTER SCIENCE AND TECHNOLOGY

COURSE NAME : 19OE114 –TOTAL QUALITY MANAGEMENT

III YEAR / VI SEMESTER

Unit 3 - TQM TOOLS & TECHNIQUES

SEVEN TRADITIONAL TOOLS OF QUALITY

UNIT- III

TQM TOOLS

&

TECHNIQUES - 1

The seven traditional tools of quality – New management tools – Six-sigma: Concepts, methodology, applications to manufacturing, service sector including IT – Bench marking– Reason to bench mark, Bench marking process – FMEA – Stages, Types

SEVEN TRADITIONAL TOOLS OF QUALITY (Q-7 TOOLS)

- Check sheets
- Histograms
- Cause and effect diagrams
- Pareto diagrams
- Stratification analysis
- Scatter diagrams
- Control charts

Tool 1: CHECK SHEET

- A check sheet also known as tally sheet
- Used for systematic data gathering and registering
- To get a clear view of the facts
- To track how often something occurs
- It is tailored for each situation/application
- Used to indicate the frequency of certain occurrences

CHECK SHEET

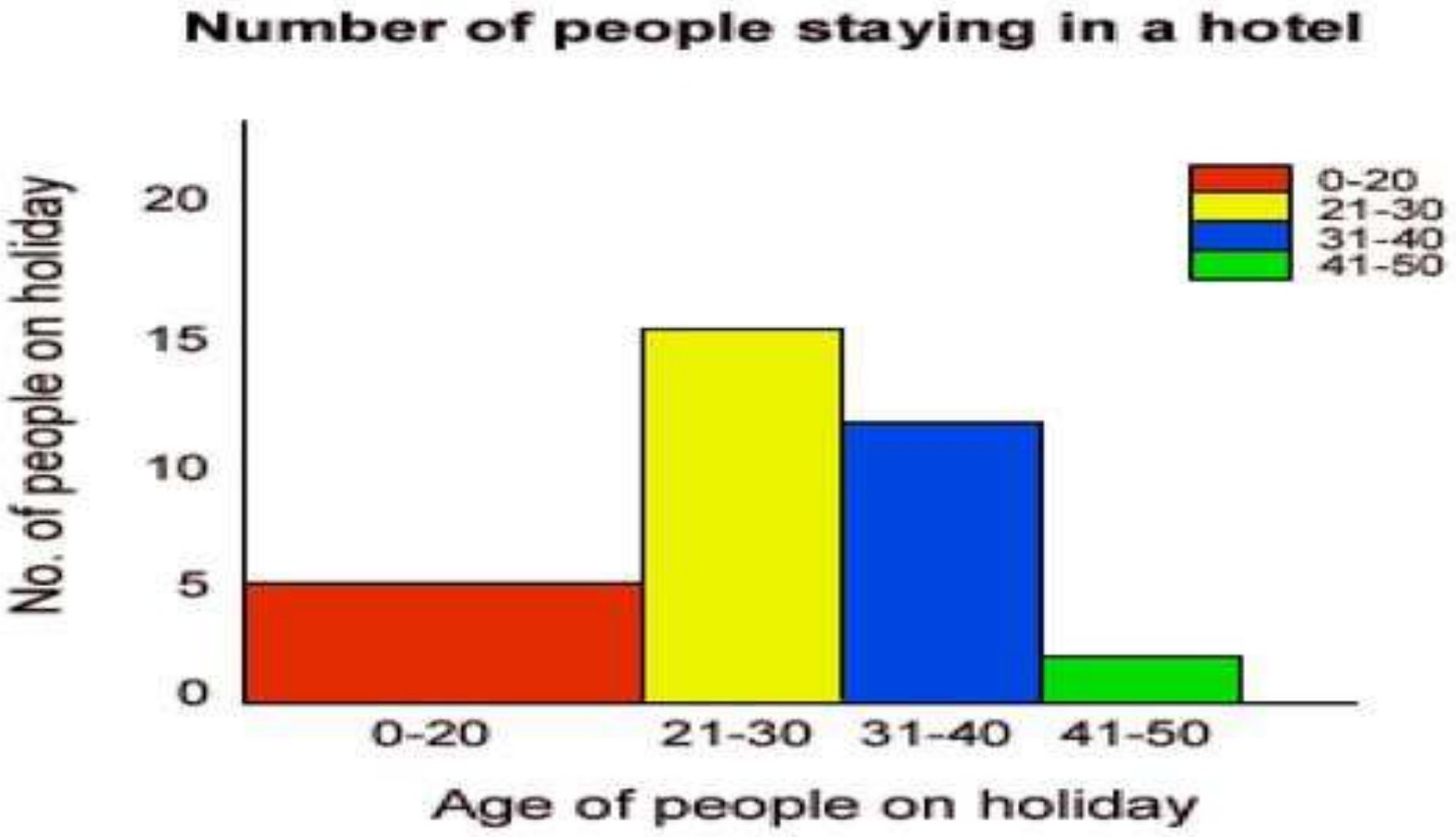
CHECK SHEET - DAILY REJECTION MONITORING									
PART NAME :		PART NO. :				MODEL:			
S. NO.	DEFECT	Date wise Rejection							Total
		1	2	3	4	5	6	7	
1	Blow Hole	15	12	10	13	11	8	10	79
2	Non filling	5	10	8	2	5	6	4	40
3	Catching	8	5	8	5	7	9	6	48
4	Carbon	12	11	8	6	4	8	9	58
5	Crack	9	13	10	8	11	5	7	63
Total		49	51	44	34	38	36	36	

Check Sheet or Tally Sheet

Tool 2: HISTOGRAM

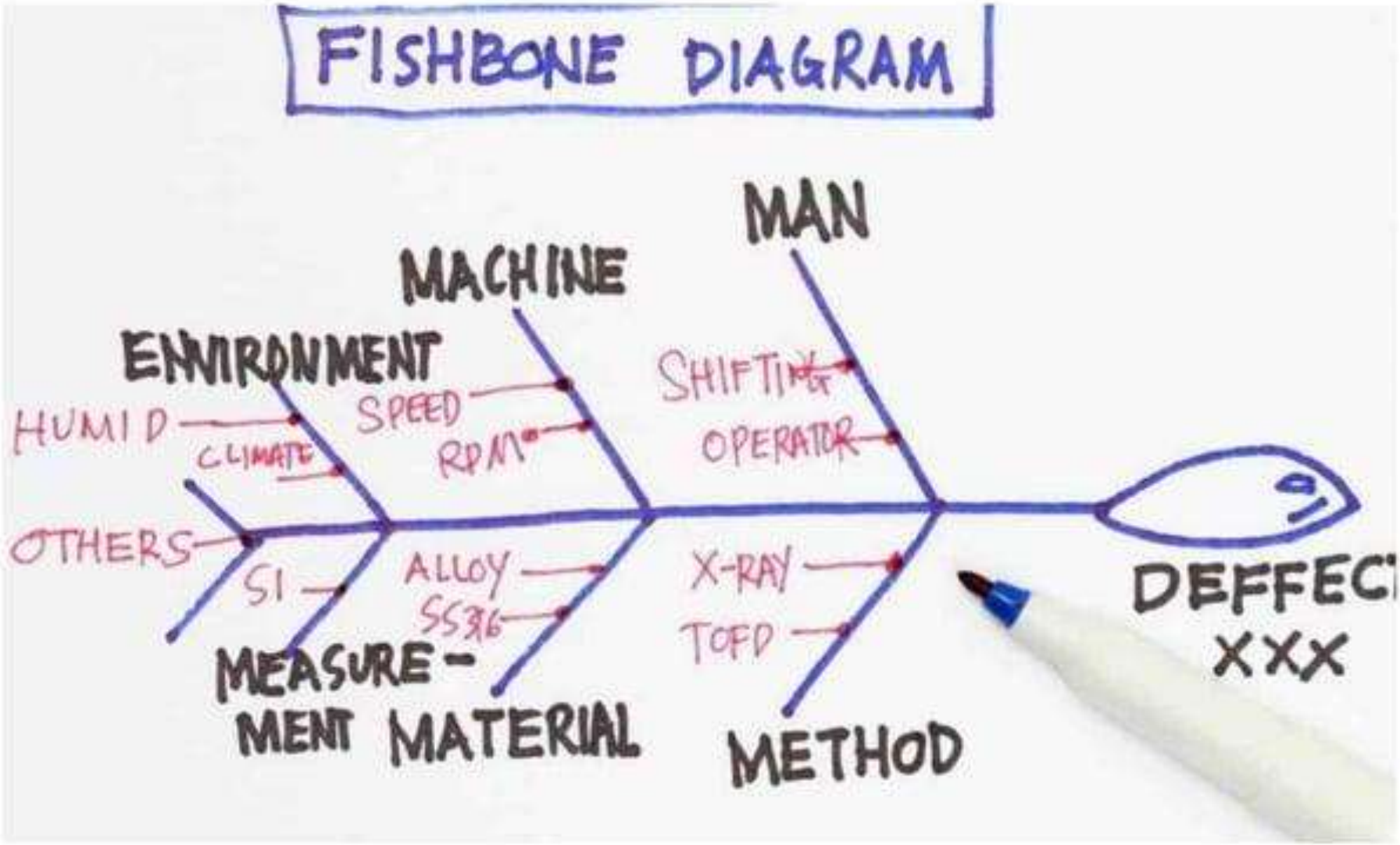
- A histogram is a bar chart/ diagram/graph
- It shows a distribution of variable quantities or characteristics
- Graphical distribution of the numerical data
- Data are displaced as a series of rectangles of equal width and varying heights
- Shows where most frequently occurring values are located and the data distributed
- Tool for determining the maximum process results
- Quick review of features of a complete set of data

HISTOGRAM


Number of people staying in a hotel
No. of people on holiday
20
15
10
5
0
0-20
21-30
31-40
41-50
Age of people on holiday
0-20
21-30
31-40
41-50

Tool 3: CAUSE AND EFFECT DIAGRAM

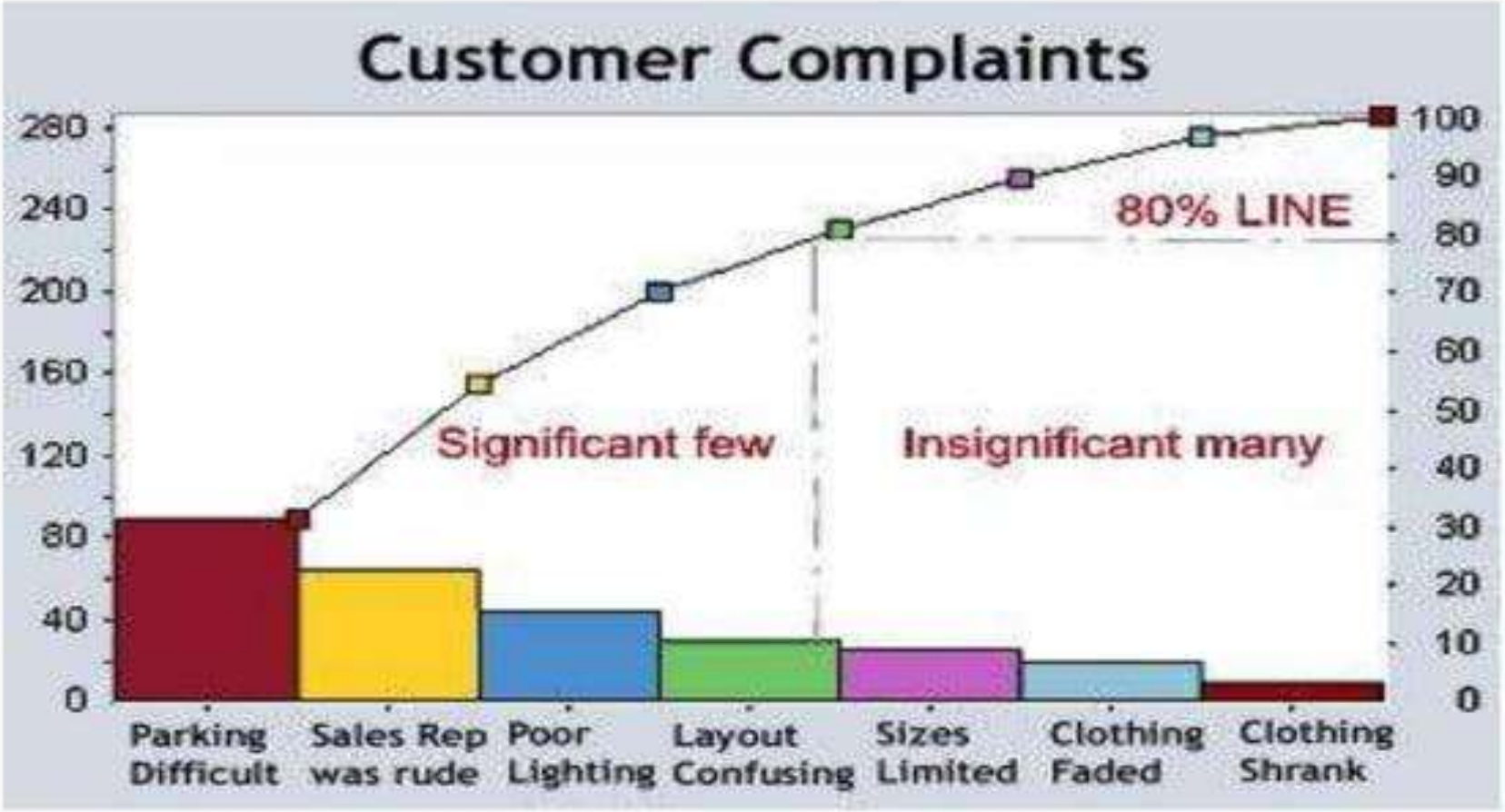
- It is also called as fish bone diagram or Ishikawa diagram
- It is a graphical chart to list and analyze the potential cause of a given problem and its effect
- It consists of a central stem leading to the effect with multiple branches coming off the stem listing the various groups of possible causes of the problems
- Used in research, manufacturing, marketing, office operations, services etc.


FISHBONE DIAGRAM
MAN
MACHINE
ENVIRONMENT
SHIFTING
SPEED
HUMID
OPERATOR
CLIMATE
OTHERS
ALLOY
X-RAY
SS316
TOFD
DEFFECT
XXX
METHOD
MATERIAL

Tool 4: PARETO DIAGRAM

- It is a diagnostic tool commonly used for separating the vital few causes that account for a dominant share of quality loss
- Pareto principle states that a few of the defects account for most of the effects
- Also called as 80/20 rule and as ABC analysis which means only 20 % of problems (defects) account for 80% of the effect
- Is a method of classifying items, events or activities according to their relative importance
- Priorities problems based on its relative importance
- Risk assessment technique from activity level to system level

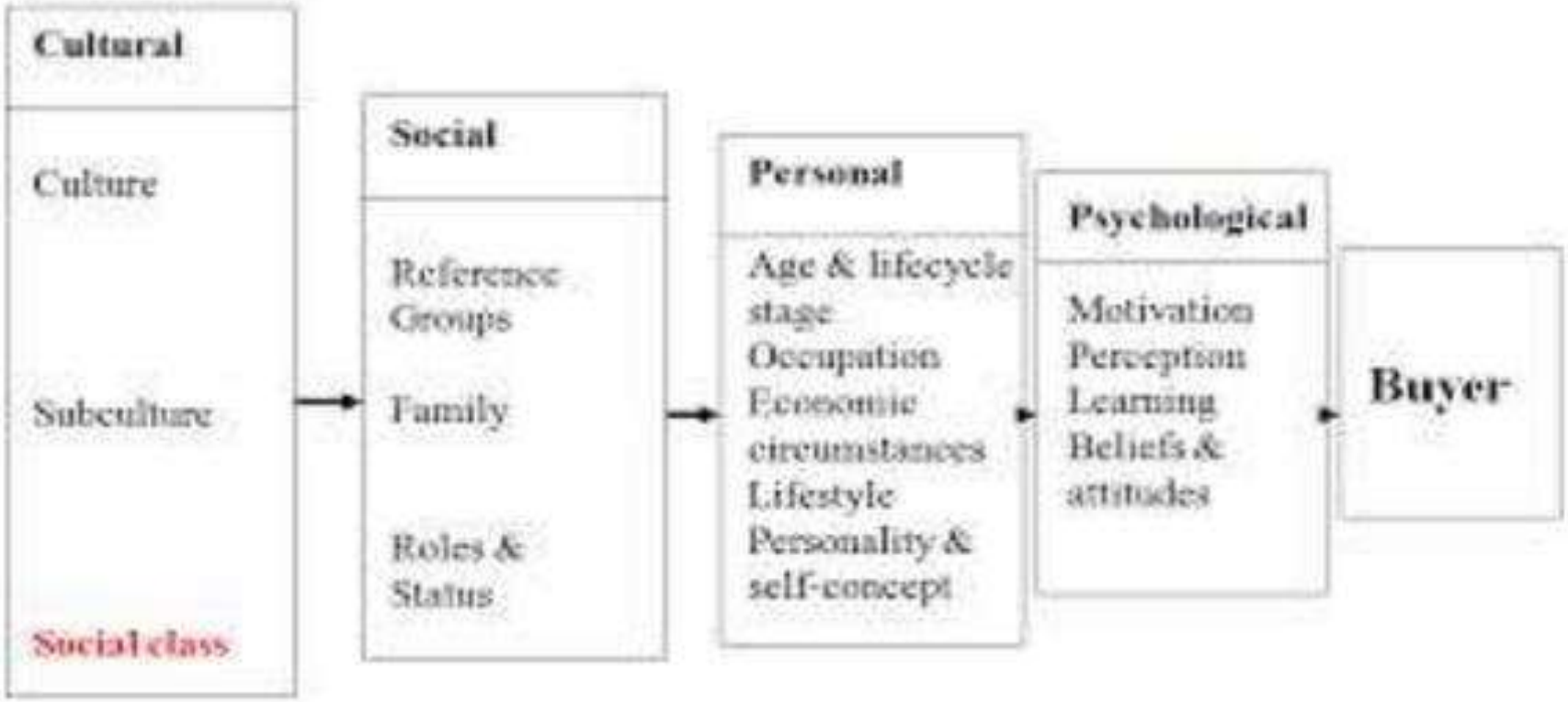
PARETO DIAGRAM



Tool 5: STRATIFICATION ANALYSIS

- Analysis of data by grouping it in different ways
- Segregating a group of measurements, observations or any data into several sub-groups on the basics of certain characteristics
- These stratified data are used for identifying the influencing factors
- Simple and very effective QC tool for improving the quality

STRATIFICATION ANALYSIS

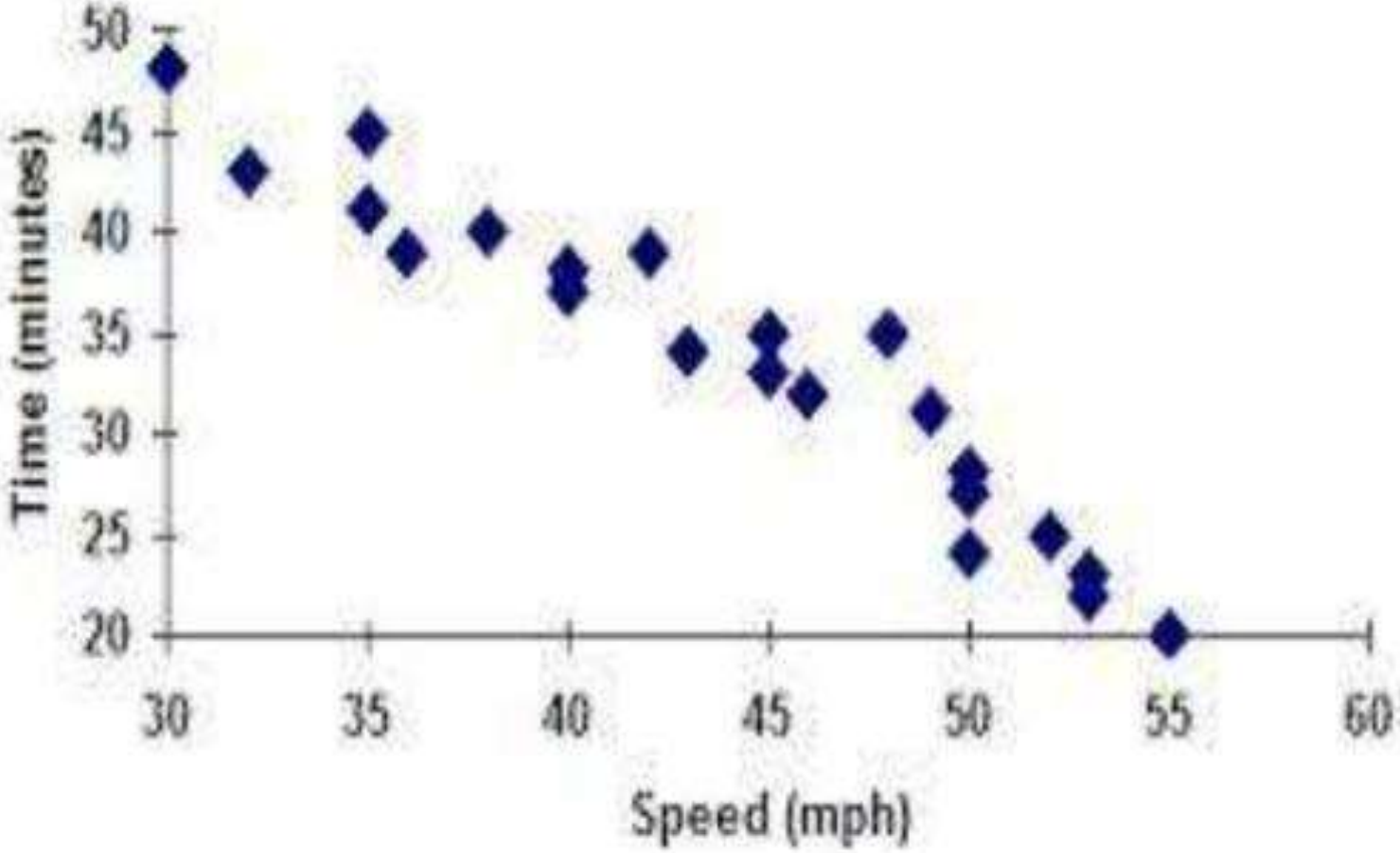


Source: Kotler et al

Tool 6: SCATTER DIAGRAM

- Graphical device to depict the relationship between two variables
- Horizontal axis – cause
- Vertical axis – effect
- Diagram displays the paired data as a cloud of points
- Density and direction of the cloud indicate how the two variables influence each other
- Displays what happens to one variable when another variable is changed
- Used to understand why particular variations occurs and how they can be controlled

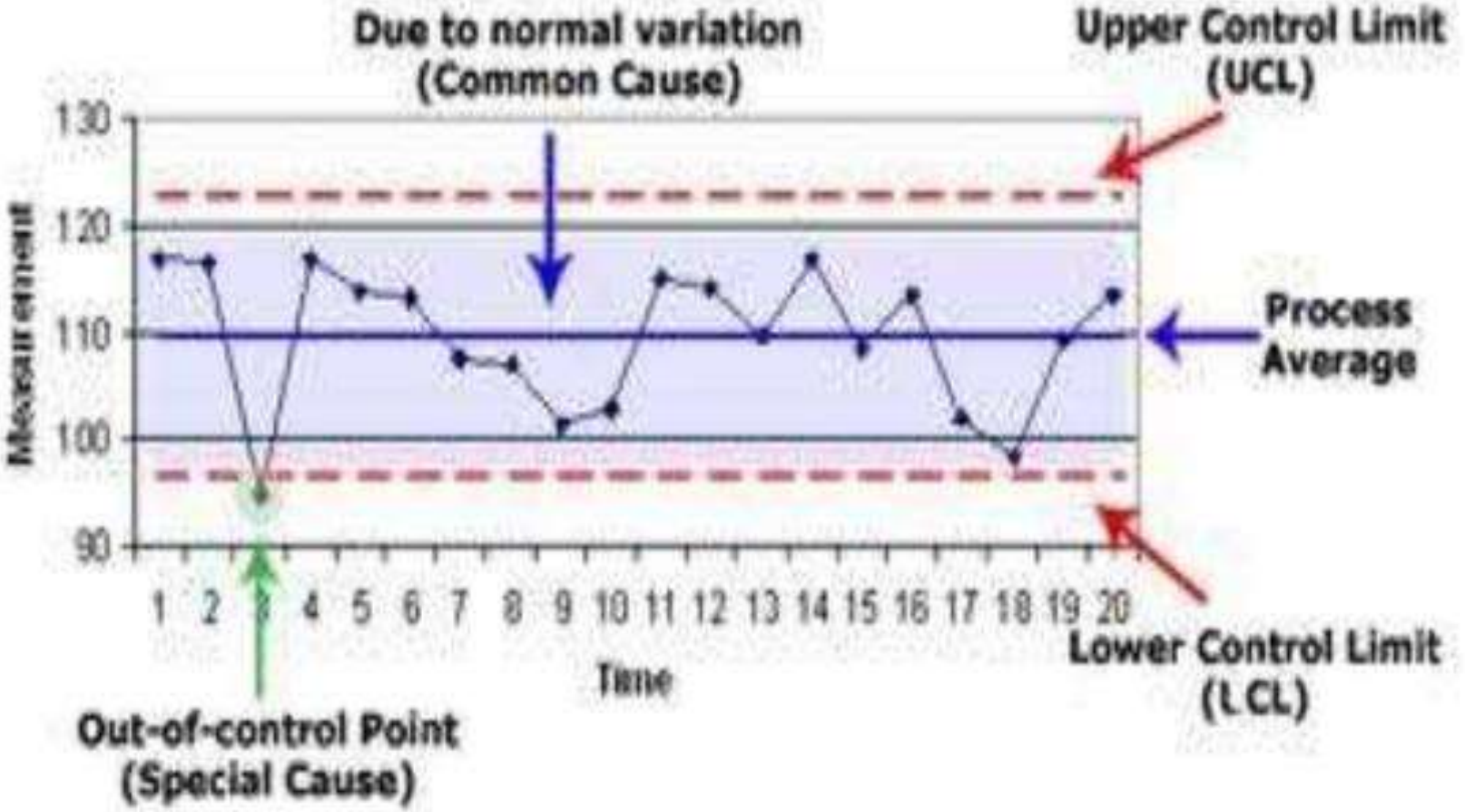
SCATTER DIAGRAM



Tool 7: CONTROL CHART

- Most widely used tool in statistical process control (SPC)
- Graph that displays data taken over time and the variations of this data
- It illustrates the dynamic performance (performance over time) of the process
- Based on a series of random samples taken at regular intervals
- It contains three horizontal lines that remains constant over time:
  - A center
  - A lower control limit (LCL)
  - An upper control limit (UCL)
- If a point lies inside UCL and LCL then the process is in control
- If the point lies outside UCL and LCL then the process is out of control

CONTROL CHART



TYPES OF CONTROL CHARTS

- **Control charts for variables** - for measurable data such as time, length, temperature, weight, pressure, etc.
- **Control charts for characteristics** - for quantifying data such as number of defects, typing errors in a report, etc.

THANK YOU