



 Sri  
**Padhmam**  
Employability Solutions



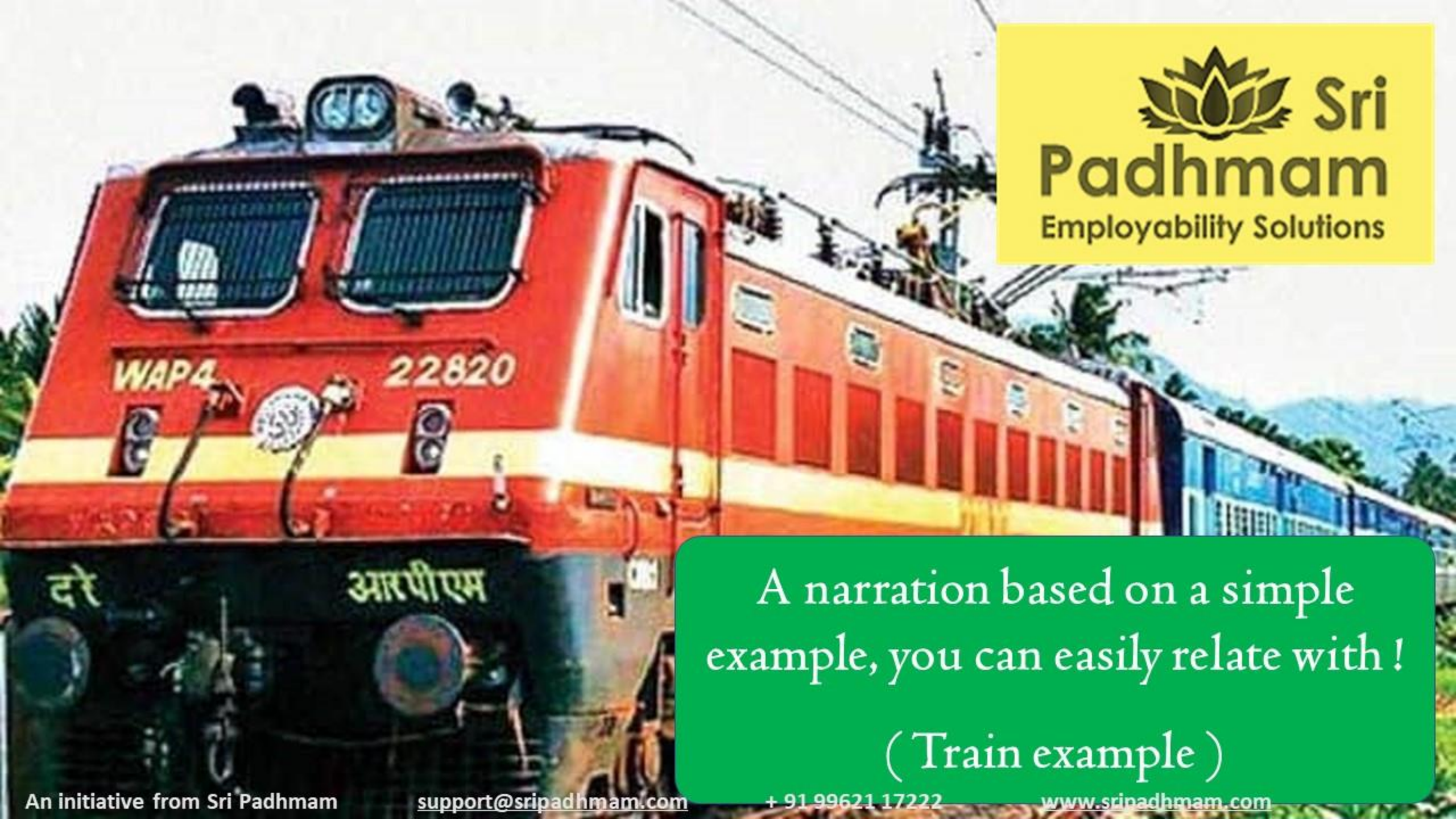
A V Manivannan ( AVM )  
Founder & Managing partner



How a Six Sigma approach looks at the types of data ?

A Close look





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A narration based on a simple example, you can easily relate with!

( Train example )

## Types of data

Categorical		Numerical				
Nominal	Ordinal	Variable ( Continuous or non-integer or moving)				Attribute ( Discrete or Integer or jumping )
		Point measure	Width measure	Ratio measure	Temporal measure	
<ul style="list-style-type: none"> <li>• <b>More of Qualitative</b></li> <li>• <b>No numeric or less focus on numeric &amp; no order</b></li> <li>• <b>Text data, Language data</b></li> </ul>	<ul style="list-style-type: none"> <li>• <b>There are numbers</b></li> <li>• <b>Organized in some order (Ascending or Descending)</b></li> </ul>	<ul style="list-style-type: none"> <li>• <b>Single point of focus</b></li> <li>• <b>Centering based</b></li> <li>• <b>Mean, Median or Mode, Mu</b></li> </ul>	<ul style="list-style-type: none"> <li>• <b>2 measures of extreme values</b></li> <li>• <b>Distance between 2 extremes</b></li> <li>• <b>Range, Standard deviation</b></li> </ul>	<ul style="list-style-type: none"> <li>• <b>Needs 2 values to compare</b></li> <li>• <b>Fraction result is possible</b></li> <li>• <b>Defect ratio, PPM</b></li> </ul>	<ul style="list-style-type: none"> <li>• <b>Time or date based</b></li> </ul>	<ul style="list-style-type: none"> <li>• <b>Goes by counts not the measures</b></li> <li>• <b>Binary decisions ( Yes / No type )</b></li> </ul>
<ul style="list-style-type: none"> <li>• Express train #123</li> <li>• Express train # 321</li> <li>• Express train # 231</li> </ul>	<p>From Delhi to Agra ....</p> <ul style="list-style-type: none"> <li>• T # 132 is the 1<sup>st</sup> train</li> <li>• T # 123 is the 2<sup>nd</sup> train &amp;</li> <li>• T # 321 is the 3<sup>rd</sup> train</li> </ul>	<p>Average speed : 60 kms / hr</p>	<p>Speed range : 45 – 95 kms / hr</p>	<p>1 out of 6 types of trains are express trains in nature ( 17 % ) in the country</p>	<p>This data is based on 15<sup>th</sup> October, 2021 statistics</p>	<p>3 trains are plying between Delhi to Agra on daily basis</p>



Situation I

CNC machines

## Types of data

### Situation I:

There are 3 machines, producing similar parts ( Drg. # XXX ) and one dimension is most important ( External diameter :  $27 + 0.01$  mm ), which has a Std. deviation of 0.002, based on 50 data points collected in a random way from all the 5 machines between 2 pm to 5 pm today .

The X bar was calculated as 27.004 mm. Upon measuring 50 samples, one part was rejected for undersize.

( You may have meaningful assumptions ! )

Categorical		Numerical				
Nominal	Ordinal	Variable ( Continuous or non-integer or moving)				Attribute ( Discrete or Integer or jumping )
		Point measure	Width measure	Ratio measure	Temporal measure	

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You may try it out !

Customer Support

# SURVEY

Excell

Situation II

Customer Satisfaction surveys

## Types of data

### Situation II:

Customer satisfaction survey ( CSS ) was done last month, between 9<sup>th</sup> to 21<sup>st</sup>. Out of 12 existing customers, 11 have offered their views. The average index was found as 88.5 %. 2 of the Customer support Engineers were engaged on this activity. This is the 3<sup>rd</sup> consecutive year, we have done this activity, The survey has 33 measurement metrics in it. ( You may have meaningful assumptions ! )

Categorical		Numerical				
Nominal	Ordinal	Variable ( Continuous or non-integer or moving)				Attribute ( Discrete or Integer or jumping )
		Point measure	Width measure	Ratio measure	Temporal measure	

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You may try it out !





How does MiniTab software look at the data ?

A Close look



Navigator

C2

**Numerical data.**  
**Both variable & Attribute in nature )**  
**( Right aligned )**



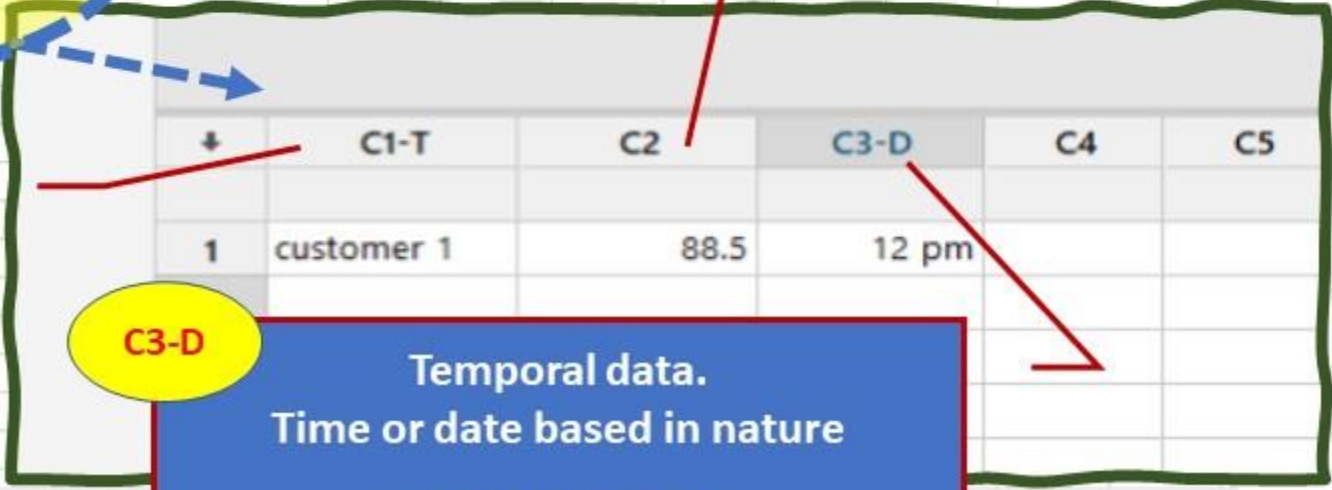
	C1-T	C2	C3-D	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14
1	customer 1	88.5	12 pm											
2														
3														
4														

C1-T

**Nominal data**  
**Text data ( Language data, Categorical in nature )**  
**( Left aligned )**

C3-D

**Temporal data.**  
**Time or date based in nature**  
**( Right aligned )**



	C1-T	C2	C3-D	C4	C5
1	customer 1	88.5	12 pm		

# Types of data : The MiniTab way

1. Textual data  
( Numeric & Alpha numeric )

2. Numeric  
( Only the numbers, both Variable & Attribute )

3. Temporal  
( Time & Date based )

	C1-T	C2	C3-D	C4	C5	C6	C7	C8	C9	C10	C11	C12
1	customer 1	88.5	12 pm	23								
2		23.0		ppap run								
3												
4												
5												

Note : Each column will accept only one type of data !

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Lean Six Sigma : Foundation workshop

*As I'm in Quality function, this program  
is very much important for me !*

*Our questions were answered nicely !*

*An implementable learning !*

*Thanks Mr. AVM*



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- ✓ This is an initiative from Sri Padhmam to disseminate the knowledge for the Engineers & Managers, in the field of Engineering, especially in Auto industry.
- ✓ For free circulation only !

### Sri Padhmam Consultancy & Training

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4.7 ★★★★★ 582 reviews ⓘ

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