

## ***Statistical Methods for Supplier Management***

Course format: Instructor-led Online Training

Course duration: 12 hours, typically three 4-hour sessions

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### ***Workshop overview***

This Pyzdek Institute online workshop is 100% hands-on with no lecture or PowerPoint. It is typically done in two 4-hour sessions with a few working days between sessions. The workshop briefly covers key statistical methods for supplier management in Minitab statistical software with time also spent tying the workshop content to Lean Six Sigma concepts. However, the workshop focus is on convincing suppliers to use a statistical approach to Continuous Improvement, building arguments against price increases and the language to include in a formal Purchasing Specification.

The workshop structure is a logical sequence of modules, many with the following steps:

1. A brief concept discussion
2. Instructor demonstration of the methods (datasets & worksheets provided)
3. Attendees work on their own, or in small groups, on the same method (dataset provided)
4. Section summary, Q&A session

### ***Case studies***

The course content includes hands-on case studies to demonstrate course concepts, one of which is to understand the true cost of non-conforming product and the negative impact on both supplier and customer finances. Instead of a spreadsheet-based Cost-of-Poor-Quality approach, the attendees will see a visual alternative in the form of a flow diagram that describes the complex supplier-customer workflow for non-conforming material events (see figure 1). The case study includes a hands-on exercise to simulate the accumulating costs associated with each step in the workflow. The result is a much clearer picture of actual remedial costs for non-conforming product. Attendees can then use this approach to press problematic suppliers to focus on a statistical approach to continuous improvement and process optimization.

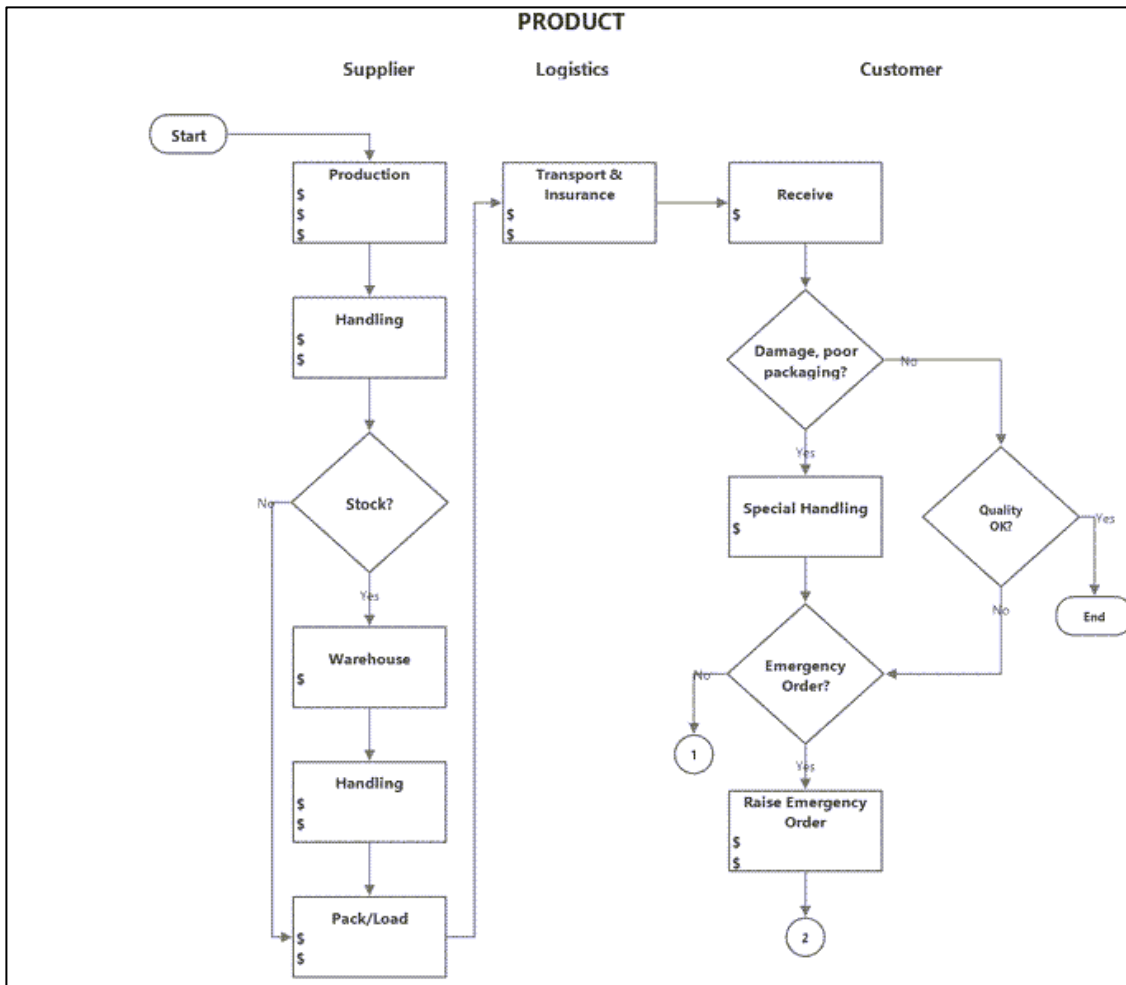


Figure 1

## Workshop Agenda

### Getting things started

<b>SUBJECT</b>	<b>DETAILS, METHODS</b>
Introductions, understanding attendee interests	<ul style="list-style-type: none"> <li>• Course goals &amp; tactics</li> <li>• Minitab skill level, is a Minitab primer needed?</li> <li>• Specific topics of interest</li> </ul>
Statistical Thinking and Recurring Themes (multiple case studies)	<ul style="list-style-type: none"> <li>• <i>The Statistical Big Picture</i></li> <li>• Key terminology</li> <li>• The Data Presentation guidelines &amp; pitfalls</li> <li>• Data Analysis, guidelines &amp; pitfalls</li> <li>• <i>The 5 Voices</i>, including the Voice of the Supplier</li> <li>• Supplier prevention, not heroics</li> <li>• The dangers of a pass-fail approach to quality and what to do about it</li> <li>• The dangers of limited comparisons and what to do about it</li> <li>• <i>The Three Principles of Statistical Thinking</i></li> <li>• Good data management practices and data integrity</li> <li>• The Operational Excellence connection</li> </ul>

## ***Convincing suppliers and preventing price increases***

<b><i>SUBJECT</i></b>	<b><i>DETAILS, METHODS</i></b>
Q: What's in it for the supplier? A: Lower costs	<ul style="list-style-type: none"> <li>• <i>The Burning Money Loop</i></li> <li>• Burning Money Loop cost calculations, hand-on exercise</li> <li>• <i>The Burning Money Graph</i></li> <li>• Burning Money Graph cost calculations, hands-on exercise to demonstrate the dangers of Pass-Fail thinking</li> </ul>
Why the supplier should reduce price in the long run	<ul style="list-style-type: none"> <li>• Forms of variation</li> <li>• The incredible cumulative effect of reducing variation</li> <li>• Case study</li> </ul>
Supporting your suppliers	<ul style="list-style-type: none"> <li>• Measurement Systems Analysis error-proofed workflow diagram</li> <li>• Statistical Process Control error-proofed workflow diagram</li> <li>• Collaborative data evaluation, hands-on exercise</li> </ul>

## ***Statistical methods for supplier management***

<b><i>SUBJECT</i></b>	<b><i>DETAILS, METHODS</i></b>
Data visualization	<ul style="list-style-type: none"> <li>• <i>The Voice of the Data</i></li> <li>• How to spot questionable datasets</li> </ul>
Measurement system considerations	<ul style="list-style-type: none"> <li>• Supplier measurement systems integrity, workflow review</li> <li>• Supplier measurement system management, case study</li> </ul>
Supplier sampling & subgrouping methods	<ul style="list-style-type: none"> <li>• Power &amp; sample size for tolerance interval, hands-on exercise</li> <li>• Sample size for critical characteristics, hands-on exercise</li> <li>• Data integrity, hands-on exercise</li> </ul>
Control chart methods	<ul style="list-style-type: none"> <li>• Review of control chart error-proofed workflow</li> <li>• IMR chart, pencil &amp; paper exercise</li> <li>• Using The Big Four to separate the supplier signal from the supplier noise</li> <li>• Control chart myths &amp; pitfalls</li> <li>• Why the supplier should control chart their important process factors (not reportable to customer)</li> </ul>
Variation	<ul style="list-style-type: none"> <li>• Forms of variation</li> <li>• The incredible cumulative effect of reducing variation</li> </ul>

## Create Purchasing Specification documents

<b>SUBJECT</b>	<b>DETAILS, METHODS</b>
The dangers of the status quo	<ul style="list-style-type: none"> <li>• Why Certificates of Compliance are statistically useless</li> <li>• Why Certificates of Analysis are statistically dubious, hands-on case study</li> <li>• The dangers of Process Capability Analysis and a hands-on case study called <i>The Quest for Narrowing Control Limits</i></li> </ul>
Purchasing Specification structure (not all subjects covered in detail, but listed for continuity purposes)	<p>To be written in collaboration with supplier</p> <ul style="list-style-type: none"> <li>• Safety requirements</li> <li>• Communication methods</li> <li>• Confidentiality requirements</li> <li>• Document responsibilities</li> <li>• Supplier qualification (hands-on exercise)</li> <li>• Supplier periodic re-qualification</li> <li>• Material performance requirements (hands-on exercise)</li> <li>• Quality &amp; sampling systems requirements (hands-on exercises)</li> <li>• Reporting requirements (hands-on exercise)</li> <li>• Packaging, labeling, palletizing and containerization requirements</li> <li>• Traceability requirements</li> <li>• Purchasing Specification version control</li> </ul>

## Optional exercises, time permitting

<b>SUBJECT</b>	<b>DETAILS, METHODS</b>
Error-proofed supplier measurement systems workflow	Hands-on exercise
Short run control charts	<ul style="list-style-type: none"> <li>• Diagnostics</li> <li>• Difference Chart and Zed Chart</li> </ul>
XBar-R chart	Paper & pencil exercise
Attribute control charts	<ul style="list-style-type: none"> <li>• Diagnostics</li> <li>• Laney P chart and Laney U chart</li> </ul>
Escalating supplier requirements to DOE approach	Hands-on exercise
Process Capability Analysis	<ul style="list-style-type: none"> <li>• Error-proofed workflow</li> <li>• Visual approach versus numerical approach</li> </ul>



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