



How to Build a Process Performance Model (PPM) Exercise Book

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EXERCISE 1: EXAMINING MODELS



Task

Teams will discuss different examples of models.



Time

- 5 minute preparation
- 10 minutes group work
- 15 minutes debrief



Purpose

- Help students focus on examining regression equations and determining the usefulness of the results.



Objectives

- Based on class discussion teams will evaluate some examples of regression equations and their usefulness as PPMs
- Give students an opportunity to discuss their PPM concerns.



Instructions

(Activity 1)

1. Form into groups as assigned by the instructor. Assign someone as the spokesperson for the group
2. Assume that regression analysis has been properly performed to derive these equations
3. Evaluate and analyze your assigned example equation and determine the type of model it represents and if it is possible to procedurally vary its input factors
4. Discuss potential implications on behavior if the equation is used by the projects and/or the organization
5. Determine what additional information would be useful for the model



Debrief

- Present your results to the entire class.

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EXERCISE 1(CONTINUED)

Example Models

1. Test Effectiveness = $0.95 - 0.03 * \text{Post Release Defect Density}$
2. Effort = $1000 - 0.25 * \# \text{ of Requirements} + 0.05 * \# \text{ of KLOC}$
3. Schedule Variance = $-0.007 + 0.08 * \text{Function Points/Man-month}$
4. Schedule Delay = $-0.04 + 1.24 * \text{Requirements Change Ratio}$
5. Defect Density (Integ Test) = $0.05 - 0.02 * \text{Defect Density (Review)}$

Evaluation Questions

<p>Will varying the factor(s) on the right side of the equation physically affect the outcome on the left side?</p>	
<p>How would you vary the factors procedurally?</p>	
<p>What type of model is represented by the equation?</p>	
<p>What might be potential impacts on organizational behavior by using this equation?</p>	
<p>What are some possible uses of the equation?</p>	
<p>Does the equation really support High Maturity? If so, how?</p>	
<p>What additional information might be useful or needed for each equation?</p>	

EXERCISE 2: BUILDING A PPM USING A SCENARIO



Task

Teams will define and develop a possible PPM factors based on a simple scenario



Time

- 5 minute preparation
- 25 minutes group work
- 15 minutes debrief



Purpose

- Help students focus on the process engineering aspects for developing a PPM.



Objectives

- Based on class discussion teams will develop a set of factors that could be procedurally controlled
- Give students an opportunity to discuss their concerns.



Instructions

(Activity 1)

1. Form into groups as assigned by the instructor. Assign someone as the spokesperson for the group.
2. Review the scenario, assigned QPPO, perform cause and effect analysis, and develop a set of key factors that can be used by to perform “what-if” analyses.



Debrief

- Present your results to the entire class.

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EXERCISE 2(CONTINUED)

SCENARIO

You are the owner of a local coffee shop that has been very successful over the past two years. Now you are ready to take on the giant, Starbucks. Your 2012 business goals are to outperform Starbucks in your local town and increase your market share. Based on market research about Starbucks and other competitors, as well as your business goals, you have established the following QPPOs for 2012:

1. Provide more menu items than Starbucks at a 15% lower price to your customers
2. Continue to serve better tasting coffee than Starbucks
3. Brew, dispense, and serve coffee and other menu items 25% faster than Starbucks by the end of March 2012
4. Achieve 25% higher customer satisfaction ratings than Starbucks by the end of the year

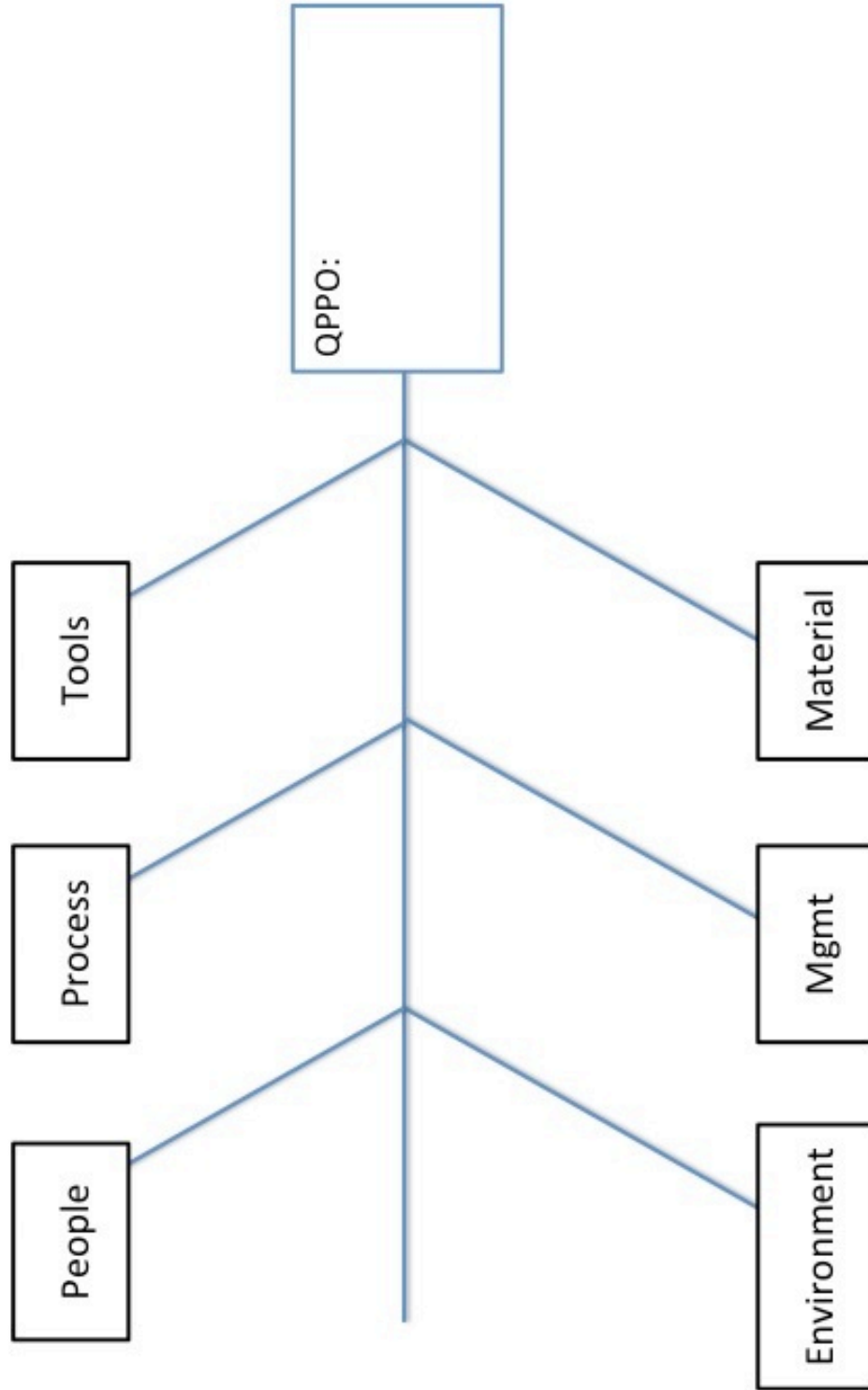
ASSUMPTIONS:

1. You have been collecting, analyzing, and storing data on all aspects of your business and have a rich set of data for the past two years
2. You have analyzed the data, selected the necessary measures and analytic techniques, and developed the Process Performance Baselines for your processes
3. All of the data you need to analyze and develop a Process Performance Model are available either from your measurement repository or from market research

Using the provided Fishbone diagram, analyze your assigned QPPO and develop a set of factors (controllable and uncontrollable) that can be used to derive a Process Performance Model. Be prepared to discuss your rationale for each of your factors and what strategies you might use if there does not appear to be sufficient data for a factor to perform regression analysis.

EXERCISE 2(CONTINUED)

Use this figure to help you determine the controllable and uncontrollable factors that might be correlated and affect QPPO achievement. Just because you have identified factors on this diagram does not necessarily mean they are related and can be combined in a PPM.



EXERCISE 2(CONTINUED)

List of Factors

List the key factors from the Fishbone Diagram that you could use to build a PPM for your assigned QPPO.

1. You may have more than one set of factors for the same QPPO
2. Are the factors procedurally controlled?
3. Do your factors allow management to determine if the QPPO will be met?