

Introduction to Six Sigma

Presented by: Wynand van Dyk Process Consultant MMS Consultants May 2008





- Your company goal?
- Process Efficiency & Variation
- Impact of Variation
- What is Six Sigma
- Case Study





- Your company goal?
- Process Efficiency & Variation
- Impact of Variation
- What is Six Sigma
- Case Study





Your company Goal?

- What is the goal of your company?
- So how do you <u>make (more) money</u>?
- One approach = saving cost
 - Retrenchments, re-organisation, cost cutting...
 - Continuous Improvement programs based on pre-conceived ideas
- Alternative approach consider these definitions:
 - Throughput: Sales of product
 - Inventory: Anything you spent money on to create throughput, but did not create it.
 - Cost: Money you spend to turn inventory into throughput.
 - Increase throughput while at the same time reduce inventory and cost
 - Process Efficiency



- Your company goal?
- Process Efficiency & Variation
- Impact of Variation
- What is Six Sigma
- Case Study







- What is the difference between these two processes?
 - Same average = 50

VARIATION



- Your company goal?
- Process Efficiency & Variation
- Impact of Variation
- What is Six Sigma
- Case Study





Impact of Variation





The impact of variance

- Set-up company/process
- Series of Dependable Events
- Each block costs R100, irrespective where it is in the process
- Each block sold = R200 revenue (100% margin)
- Dice determines your monthly throughput
- Average = 3.5
- Each unit has the same capacity
- Target = R3500 profit





- Your company goal?
- Process Efficiency & Variation
- Impact of Variation
- What is Six Sigma
- Case Study





Six Sigma is a data driven business philosophy of focussing on continuous improvement. It is aimed at the near-elimination of defects from every process, transaction & product by (eliminating the various elements of waste and) reducing variation. In addition, it focuses at understanding both internal, as well as external, customer needs, analysing business processes, and instituting proper measurement methods.



What is Six Sigma?



The idea behind Six Sigma is to take a business problem, translate it into a mathematical problem from which a mathematical solution is derived and translated back into a business solution



- Proven track record in manufacturing
 - Introduced in Motorola in 1988
 - Introduced in Allied Signal in 1995
 - Introduced in GE in 1996
- All these programs are <u>still</u> ongoing
- Proven track record in mining
 - Rio Tinto 1999
 - BHP 2001
 - Lonmin 2004
- Also in healthcare, financial institutions & service industry



Cost Benefit

Yield	PPMO	COPQ S	Sigma	
99.9997%	3.4	<10%	6	World Class Benchmarks
99.976%	233	10-15%	5	10% GAP
99.4%	6,210	15-20%	4	Industry Average
93%	66,807	20-30%	3	10% GAP
65%	308,537	30-40%	2	Non Competitive
50%	500,000	>40%	1	

Source: Journal for Quality and Participation, Strategy and Planning Analysis

What does 20% of your company revenue mean to you?



Overview of DMAIC

Overview

The DMAIC philosophy focuses on identifying a business problem, transposing the problem to a statistical problem, finding a statistical solution to the problem & transposing the solution to a business solution





Overview of DMAIC





Overview of DMAIC

Mandatory steps





- Your company goal?
- Process Efficiency & Variation
- Impact of Variation
- What is Six Sigma
- Case Study





Lonmin PLC – Key Facts

- Lonmin produces over 900,000 ounces of Platinum (1,700,000 ounces of total PGMs) per year
- Lowest cost primary Platinum producer in the world
- Operations in South Africa include:
 - three contiguous mines in Marikana
 - fourth mine in Limpopo
 - Smelter
 - Base Metal Refinery & Precious Metal Refinery
- Mine life currently in excess of 40 years
- Over 74.1m ounces of proven and probable reserves





Key deployment dates

- Executive Forum agree to 6 Sigma July 2004
- Burning Platform articulated August 2004
- Design Team August to September 2004
- First intake of BB's (24) October 2004
- Training complete March 2005
- First intake of GB's (25) October 2004
- 130 GB's trained by September 2005
- First intake of MBB's October 2005



Project Pipeline (Sept 2005)





REME





Declared Benefits

	_
Description	Total
Total Realised benefits recorded for the 2004/2005 FY	R 313,422,107
Less: Benefits attributable to Fat Rabbit projects	R -79,638,339
Equal: Sub-total of Six Sigma project benefits	R 233,783,767
Less: Total Cost of deployment, including salaries & CSI	
Fees	R -28,141,006
Equal: Net benefit of program for 2004/2005FY	R 205,642,761



The Reward

