DSC1007X Sem 1 2016/17 - TinyMOS Simulation Project
Class Q2 Team 1
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Decision Analysis

	Highest Profit	Lowest Profit
Exclusive Royalty Patent to Nikon (Option 1)	$30,000	$30,000
Joint development with Qualcomm (Option 2)	$67,434.79	-$26,059.18
Operate alone (Option 3)	$169,269.58	-$98,518.35

Mathematical formulation for options 2 and 3

Assumption: number of cameras produced is same as the market demand
Let x be the number of cameras produced

Market
Market conditions are based on lookup table to find mean and std
Market demand = NORMINV(RAND(), mean, std)

Variable costs
Prototyping result and cost is based on lookup table
R&D costs are considered as separate costs from prototyping costs
R&D cost = 20000 + RAND() * (35000-20000)
Raw materials cost = x * 110
Labour cost = x * 70
Total variable cost = prototyping + R&D + raw materials + labour

Fixed costs
Total fixed cost = 25000 + 7000 + 5000 = 37000

Revenue = 500*x
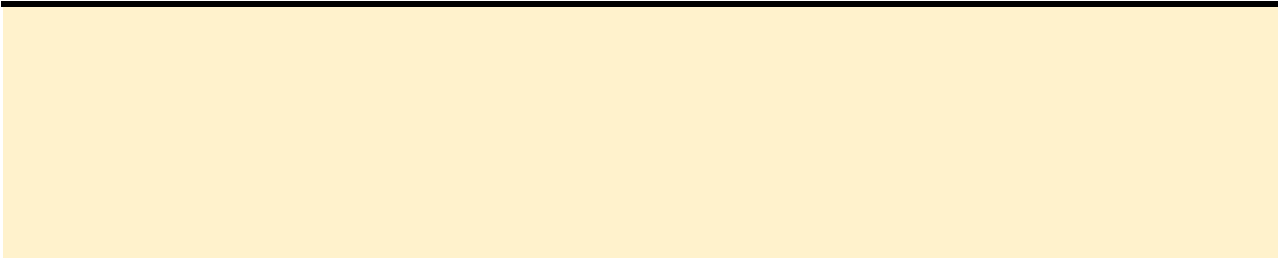Total cost = total variable cost + total fixed cost

Operate alone
Profit = revenue - total cost

Joint development
Profit = 25000 + 40%*revenue - 50%*total cost

Mean	Variance	Standard Deviation	Probability of loss
$30,000	0	0	0
$14,424.59	278280020.1	16681.72713	0.167
$20,119.98	2251426919	47449.20357	0.281