**Assignment # 1: Engineering Management**

Due Date: Saturday 10/10/2015

**Please answer the following four questions:**

**Question 1**

Tom Taylor, the Sales Manager, was told by his boss, Carl Bauer, to take an order from a new customer for a batch of products. Tom knew that the products involved would only partially meet the customer’s requirements and that Carl knew that. But, Carl insisted that the order was too valuable to lose. What should Tom do?

**SOL.**

**There are four reasons why Tom Taylor takes the order as directed:**

**A. It is not an accepted practice in the U.S. to disobey one’s boss. Insubordination is a valid cause for instant discharge.**

**B. There is a chance that Carl Bauer knows something about this customer that Tom does not.**

**C. Tom’s understanding of the customer's requirements could be outdated.**

**D. Should this new customer become dissatisfied at a later time, Carl Bauer will be fully responsible for it. Tom Taylor need not be concerned about it. Furthermore, remedial action can be readily taken at that time to make good with this customer.**

**Question 2**

Nancy Bush, the plant manager, needs to decide whether to make or buy a component for the company’s core product. She would like the advice of her production supervisors, since they must implement her eventual decisions. However, she fears that the supervisors will be biased towards making the component in house, as they tend to favor retaining more work for their people. What should Nancy Bush do?

**SOL.**

**Nancy Bush should do the following:**

**A. Develop the evaluation criteria for the decision (e.g., cost, speed of delivery, time to market, quality control, supplier relationship, availability of plant capacity, novelty of technology, tooling requirements for in-house production, material procurement, etc.) and make a preliminary assessment.**

**B. Talk to both supervisors separately and enlist their evaluation based on the above criteria.**

**C.) Review the inputs of both supervisors and make a decision. For example, decide to buy now and plan for in-house production in one year if the supplier relationship does not work out.**

**D.) Communicate with the supervisors and explain his rationale for the final decision.**

**Question 3**

The engineering Manager proposes to install an automated bar code scanner costing $4,000. He estimates that he can save about 100 hours of labor time per month because of its speed. He further reasons that at the wage rate of $15/hour, the benefit of using the scanner is $1,500/month and the scanner can be paid back in 2.67 months. As the president of the company, do you agree or disagree with the way he computes the cost/benefit ratio? Why and why not?

**SOL.**

**The answer to this question is a definite “maybe.” Obviously, his computation of the cost is correct. However, his estimation of the realizable benefit is questionable.**

**The engineering manager has so far failed to show that 100 hours of labor saved per month can be effectively used to yield tangible and measurable financial benefit for the company. If the saved labor time is used by workers to drink more coffee and/or socialize more, then there is no evidence that the president will see a benefit of $1500/month. Real benefits are possible under the following circumstances:**

**A. If, because of the saved labor time, the company can now reduce the labor force by half a person per year (e.g., by way of scaled down overtime and/or switching one worker from full time to part-time), then the saving of $18,000/year (or $1500/month) can be effectively realized.**

**B. If the saved labor time can be used to generate new sales orders (e.g., by way of shuffling the work around to unload a sales person) which in turn would bring in new sales revenue, then the benefit is also real and documentable in financial terms.**

**In the absence of any evidence to demonstrate how the saved time can be translated into real benefit, the claim of the engineering manager is at best a possibility with unknown probability. To support the equipment proposal the engineering manager needs to go one step further in defining how the benefit can indeed be realized, as his current benefit to cost analysis is too vague.**

**Question 4**

There are always risks associated with the experimentation of a new manufacturing process or with the entry into a new global market, the risks of failure. How should one decide to proceed or not to proceed with a risky venture? What is the proper level of risks to take?

**SOL.**

**All new ventures have inherent uncertainties. In deciding to take the risks of going forward with the venture, several questions need to be answered first:**

1. **Should it luckily turn out to be successful, what is the**

**maximum pay-out (e.g., value) of the venture?**

1. **Why is the venture deemed to be risky? How likely are all**

**risk factors expected to play out in reality? What contingency steps are available to minimize the impact of these risky factors? Answers to these questions will lead to an assessment of the probability of success for the venture.**

1. **Should the venture fail (e.g., time delay, reputation,**

**company bankruptcy, loss of market share, etc.), what is the adverse impact on company?**

**A typical set of guidelines for avoiding taking unwarranted risks may include the following:**

1. **The cost of going forward with the venture must be much**

**smaller than the expected value of the risky venture (the probability of success multiplied by the maximum pay-out of venture).**

1. **The adverse impact on company must be smaller than the**

**maximum pay-out of the venture.**

**Question 5**

A company has always been focused on the high-quality high-price end of the market. Now, market intelligence indicates that some competitors are planning to enter the low-price low-quality end of the market. What should the company do?

**SOL.**

**Obviously, the company must find ways to protect its current market share in the high-price, high-quality niche. Without protection, this niche could become slowly eroded by the anticipated introduction of a new low-price, low quality product by the competition. Time is of essence and the company must act quickly. Thus, the strategic plan to protect company’s position should include:**

1. **Explore the option of importing a low-price and low-quality product to the market and make inquiries about cost, performance, delivery and logistics.**
2. **Follow the competition closely to understand their new products and evaluate the market reaction to them.**
3. **If the market exhibits signs of accepting the competition’s new products, then the company should introduce the imported products to compete directly at a discounted price. The purpose is to reach and understand customers in this new low-price, low-quality niche so that they may be served better in the future.**

**One obvious alternative is for the company to drive out the competition using the imports, based on a “second brand” strategy.**

1. **If the company registers a decline of sales in the high-price and high-quality market niche, then it should consider the development of new medium-price and medium-quality products in order to recover some of its lost customers.**