



Republic of the Philippines  
City of Olongapo

## GORDON COLLEGE

Olongapo City Sports Complex, East Tapinac, Olongapo City  
Tel. No. (047) 224-2089 loc. 314



### Quantitative Methods

#### Lecture

##### A. Explore

###### 1. Watch a YouTube Video entitled: Decision-Making in Organizations.

<https://tinyurl.com/lesson1QM> After watching, list a few things you learned from the video. (15 points)

-The things I have learned about in the first video of being a data scientist is that, <sup>(1)</sup> it is the fastest growing jobs in recent years. Although it is one of the most popular jobs we can get, <sup>(2)</sup> there are still abundant data to analyze and learn as business demands skyrocket, hence the need for more data scientists. <sup>(3)</sup> The skills needed for this job aren't child's play too, as it needs strong programming skills, a strong foundation in statistics and mathematics, and database knowledge. <sup>(4)</sup> These skills are only the surface as per the video, there are still skills a person needs to learn to become a full-fledged data scientist. <sup>(5)</sup> For programming language, according to the video, Python, according to the 70% of F500 data scientists is the most popular language to use for advanced analytics for their business and product development. <sup>(6)</sup> For databases, SQL is the top choice according to the video because of its ability to manipulate data. <sup>(7)</sup> The employees have a background of at least being a degree holder for computer science in this field, making it a very hard position to obtain.

-The things I have learned about the second video; Decision-Making in Organizations is that, <sup>(1)</sup> having the right decision-making framework is the key to catch up to your competitors and adapt to the changing needs. This is why <sup>(2)</sup> diligence-based approach is the best approach to cover this kind of problem as it requires systems of activity measurement and performance management, along with management and communication practices for supporting these systems. <sup>(3)</sup> Moreover, according to the video, diligence-based strategy relies more on empirical data, rather than opinions.

##### B. Explain

###### 1. Why is it important to calculate breakeven point (BEP)? (10 pts)

-Calculating the breakeven point (BEP) is very important for businesses. It's like the magic number where the money coming in from sales matches up exactly with all the costs going out. Knowing the BEP helps companies figure out how much they need to sell to cover all their expenses, both fixed and variable. This info is gold for setting sales goals and deciding on prices. Plus, it gives a clear picture of how much risk a business is taking on and helps



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with smart money moves like controlling costs and managing resources. Basically, keeping an eye on the BEP is key for staying on track, making profits, and keeping the business running smoothly.

### 2. How quantitative analysis approach are useful in management? (10 pts)

-Quantitative analysis approaches are super useful in management for a bunch of reasons. First off, they help managers make decisions based on hard numbers rather than just gut feelings. This means they can rely on data to figure out things like how to allocate resources, set goals, and measure performance. Quantitative analysis also lets managers spot trends and patterns in the data, which can help them predict future outcomes and plan accordingly. Plus, it's great for comparing different options and figuring out which one makes the most sense financially. Overall, quantitative analysis gives managers the tools they need to make smart, informed decisions that can lead to better outcomes for their teams and their organizations.

### C. Engage

#### A. Answer the following: (5 pts. each)

1. Selling price is \$1.50, cost/bagel is \$.80, fixed cost is \$250. Compute for Breakeven point?

$$f = 250, s = 1.50, v = .80$$

$$x = f / (s - v)$$

$$x = 250 / (1.50 - .80)$$

$$\text{Breakeven Point} = \$357.14$$

2. Seeking a profit of \$1,000, selling price is \$1.25, cost/bagel is \$.50, 100 sold/day. What is fixed cost?

-The formula for fixed cost is "Fixed cost = Total production cost – (Variable cost per unit \* Number of units produced" or this formula:

$$FC = TC - (VC \times Q)$$

But there is still a missing information, which is the variable cost per unit and the total cost.

To calculate the VC, get the difference between selling price and the cost per bagel.

$$VC = 1.25 - 0.50 = 0.75$$



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Here, we got 0.75 as our vc. Now, I can calculate the TC and after that, the FC. Formula for TC:

$$TC = (VC \times Q) + PROFIT$$

$$TC = (0.75 \times 100) + 1000$$

$$TC = 75 + 1000 = 1075$$

Now that I have all the information, I can now use the formula for FC.

$$FC = TC - (VC \times Q)$$

$$FC = 1075 - (0.75 \times 100)$$

$$\textbf{Fixed cost} = \textbf{\$1000}$$

### B. Answer the following: (5 pts. each)

The company buys, sells, and repairs old clocks. Rebuilt springs sell for \$10 per unit. Fixed cost of equipment to build springs is \$1,000. Variable cost for spring material is \$5 per unit.

#### 1. Compute for profit if sales is 500.

Solution:

Given:

Selling price per unit (S) = \$10

Fixed cost (F) = \$1,000

Variable cost per unit (V) = \$5

Number of units sold (sales) = 500

Profit = (Selling price per unit)(number of units sold) – [Fixed cost + (Variable costs per unit)(Number of units sold)]

$$\text{Profit} = (10)(500) - [1000 + (5)(500)]$$

$$\text{Profit} = 5000 - 3500$$

$$\textbf{Profit} = \textbf{\$1500}$$



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### 2. Find BEP.

Solution:

Given:

Fixed cost (F) = \$1,000

Selling price per unit (S) = \$10

Variable cost per unit (V) = \$5

$$X = f / (s - v)$$

$$X = 1000 / (10 - 5)$$

$$X = \$200$$

### 3. Is there a profit in 150 units sales? Explain.

Solution:

Given:

Selling price per unit (S) = \$10

Fixed cost (F) = \$1,000

Variable cost per unit (V) = \$5

Number of units sold (sales) = 150

Profit = (Selling price per unit)(number of units sold) – [Fixed cost + (Variable costs per unit)(Number of units sold)]

$$\text{Profit} = (10)(150) - [1000 + (5)(150)]$$

$$\text{Profit} = 1500 - 1750$$

$$\text{Profit} = -\$250$$

Since the calculated profit is negative (\$250), it means that at 150 units of sales, the company incurs a loss of \$250. This indicates that the total revenue generated from selling 150 units is insufficient to cover both fixed and variable costs, resulting in a loss.



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### **C. Answer the following: (5 pts)**

Seeing a need for childcare in her community, Sue decided to launch her own daycare service. Her service needed to be affordable, so she decided to watch each child for \$12 a day. After doing her homework, Sue came up with the following financial information:

- Selling Price (per child per day) \$12
- Operating Expenses (per month)
- Insurance 400 + Rent 200 = Total OE \$600
- Costs of goods sold \$4.00 per unit
  - Meals 2 @ \$1.50 (breakfast & lunch)
  - Snacks 2 @ \$0.50

**How many children will she need to watch on a monthly basis to breakeven?**

Solution:

$$X = f / (s - v)$$

$$X = 600 / (12 - 4)$$

$$X = 75$$

Sue has to have a total of 75 children in her program over the month to breakeven.