



### Case Problem # 6 Marion Dairies

Student's Name

Institutional Affiliation

Course Number and Name

Instructor Name

Due Date

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#### Managerial Report

The entry of Marion Dairies into the yogurt market has so far yielded meaningful positive outcomes. In particular, the cautious production, distribution, and marketing of Blugurt have been successful. The sales report indicates that in the past year, the volume of purchases of Blugurt was higher than the original projections. The remarkable success recorded by Blugurt in sales and consumer approval has influenced the management of Marion Dairies to consider launching a second yogurt flavor in the market. Specifically, the marketing unit is proposing that the company should extend its product line by launching Strawgurt, a strawberry-flavored yogurt. However, Marion Dairies' top executives are uncertain of whether the recommendation by the marketing department is feasible, especially with regard to increasing the firm's market share by attracting prospective customers who do not find Blugurt appealing. The marketing unit of Marion Dairies has initiated a market survey to measure the feasibility of introducing strawberry yogurt into the market. The purpose of the present managerial report is to summarize the probabilities linked with the sample used by the marketing department and to make appropriate considerations for increasing the sample size.

#### Analysis of the Probabilities

1. Calculate the probability that the mean score of Blugurt given by the simple random sample of Marion Dairies customers will be 75 or less (Round your answer to four decimal places.)

**Answer**

**Computation Formula**

$$z = \frac{X - \mu}{\sigma}$$

Where,

z= standard score

X= data point in question

$\mu$ = population mean

$\sigma$ = standard deviation

The sampling size =50

Standard deviation=25

Mean =80

Therefore,

$$z = (75-80)/\left(\frac{25}{\sqrt{50}}\right) = -1.41$$

$$P(z \leq -1.41) = 0.5 - 0.42073 = 0.07927\%$$

2. If the Marketing Department increases the sample size to 140, what is the probability that the mean score of Blugurt given by the simple random sample of Marion Dairies customers will be 75 or less? (Round your answer to four decimal places.)

**Computation Formula**

$$z = \frac{X - \mu}{\frac{\sigma}{\sqrt{n}}}$$

Where,

z= standard score

X= data point in question

$\mu$ = population mean

$\sigma$ = standard deviation

The sampling size =50

Standard deviation=25

Mean=80

Therefore,

$$z = (75-80)/\left(\frac{25}{\sqrt{50}}\right) = -2.45$$

$$P(z < -2.4494) = 0.5 - 0.49266 = 0.0073 = 0.73\%$$

### Discussion

The probabilities of the samples proposed by the marketing department are distinct because of the change in the sample size. A larger sample size produces a smaller standard error and vice-versa for a smaller sample size.